HS 637035

REPORT NUMBER: 201U-VER-04-06

SAFETY COMPLIANCE TESTING FOR FMVSS 201 OCCUPANT PROTECTION IN INTERIOR IMPACT UPPER INTERIOR HEAD IMPACT PROTECTION

HYUNDAI MOTOR COMPANY
2004 HYUNDAI XG350 4-DOOR SEDAN

NHTSA NUMBER: C40500

GD TEST NUMBER: 8730-06

ADVANCED INFORMATION ENGINEERING SERVICES
A GENERAL DYNAMICS COMPANY
TRANSPORTATION SCIENCES CENTER
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Test Date: February 6, 2004

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
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16. *Abstract*

Compliance tests were conducted on the subject vehicle, a 2004 Hyundai XG350, 4-Door Sedan, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure TP-201U-01 for determination of FMVSS 201 compliance. Test failures identified were as follows in the table below:

Target Point	Horizontal	Vertical	Velocity	HIC	HICd
None	-	-	-	-	-
None	-	-	-	-	-

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SECTION 1

PURPOSE AND TEST PROCEDURE

This head impact compliance test is part of the FMVSS 201 Upper Interior Head Impact Protection Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-99-C-01005. The purpose of this head impact compliance test was to determine whether the subject vehicle, 2004 Hyundai XG350 4-Door Sedan, NHTSA No. C40500, meets the performance requirements of FMVSS 201, Occupant Protection in Interior Impact. The compliance test was conducted in accordance with the OVSC Laboratory Test Procedure No. TP-201U-01 dated April_03,1998.

SECTION 2

SUMMARY OF UPPER INTERIOR HEAD IMPACTS

A 2004 Hyundai XG350, 4-Door Sedan, NHTSA No.C40500, was impacted at various locations throughout its upper interior by a 4.54 kg 50th percentile headform. A total of ten (10) impacts were performed in this test series. The target area impacts were chosen by the NHTSA Contracting Officer's Technical Representative (COTR). A summary of test results can be found on data sheet 2-1. The ten (10) area chosen for testing were:

BP4	SR3	RP2	BP1	AP3
AP1	BP2	URBP	URRP	AP2

The selected impact areas on the test vehicle appeared to comply with the performance requirements of FMVSS 201.

Five Free Motion Headforms (FMH), were used in this test series. All five FMH's were calibrated prior to and after the test series. Calibration information are included in Appendix B. Each FMH weighed 4.54 ± 0.5 kg and has an orthogonal tri-axis accelerometer pack mounted at the center of gravity (c.g.).

A total of three (3) channels of data for each target impact test are recorded on a Keyser Threde data acquisition system. Data plots, along with still photographs, can be found in Section 3 of this report.

To document each target area impact test, one Weinberger high-speed video camera was placed at various locations to view the headform contact with the selected target area.

DATA SHEET 2-1

SUMMARY OF UPPER INTERIOR HEAD IMPACT TESTS

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

TARGET CODE	Target Coordinates						Approach Angles (degrees)		Velocity (kph)	FMH HIC	HIC(d)
	Driver Side			Passenger Side							
	X(mm)	Y(mm)	Z(mm)	X(mm)	Y(mm)	Z(mm)	Horizontal	Vertical			
AP1	1197.6	-561.4	918.6	1199.7	551.9	919.7	122	42	23.74	953.5	885.8
AP2	1058.9	-609.8	831.9	1057.9	604.7	833.2	218	43	23.59	496.2	540.8
AP3	948.3	-632.9	763.7	950.2	626.7	766.6	134	45	23.35	512.6	553.1
BP1	1687.9	-486.5	1005.7	1690.9	480.1	1006.3	90	22	23.51	812.0	779.1
BP2	1660.9	-598.7	764.8	1663.9	598.2	764.9	270	7	23.59	854.2	810.9
BP3	1642.2	-623.8	806.2	1644.0	620.9	803.7	Relocated 1 circle		-	-	-
Rel. BP3	1635.8	-627.1	819.7	1640.7	618.6	821.9	-	-	-	-	-
BP4	1702.1	-662.0	701.4	1707.0	662.7	705.0	135	-10	23.5	667.7	670.2
FH1	1133.8	-457.2	960.6	1138.9	450.5	961.6	-	-	-	-	-
FH2	1114.4	-304.7	969.1	1120.2	300.4	967.7	-	-	-	-	-
RP1	2490.8	-520.1	955.7	2493.3	517.0	957.3	Relocated 2 circle		-	-	-
Rel. RP1	2527.1	-535.5	936.2	2520.2	526.7	938.7	-	-	-	-	-
RP2	2449.7	-614.4	802.3	2460.2	615.1	806.2	79	14	23.68	546.0	578.3
RH	2486.2	-348.0	1009.7	2489.4	343.1	1009.2	-	-	-	-	-
SR1	1346.1	-507.6	958.8	1347.6	497.8	962.0	-	-	-	-	-
SR2A	1495.3	-514.2	987.5	1502.1	501.5	991.7	Relocated 2 circle		-	-	-
Rel. SR2A	1497.2	-493.5	964.5	1503.1	488.7	961.2	-	-	-	-	-
SR2B	1389.3	-516.1	981.5	1391.3	504.3	986.8	Relocated 2 circle		-	-	-
Rel. SR2B	1393.5	-497.7	955.9	1394.0	488.1	957.2	-	-	-	-	-
SR3	2003.1	-503.3	971.5	2009.8	489.6	981.8	90	41	23.47	424.3	486.5
URAP	1346.9	-421.3	1015.8	1349.7	403.9	1018.9	-	-	-	-	-
URBP	1687.7	-392.9	1053.2	1686.3	386.3	1052.5	270	47	23.42	848.6	806.7
URRP	2370.8	-424.5	1025.0	2370.9	420.6	1026.7	309	47	23.38	981.0	906.5

*HIC(d)=0.75446(Free Motion Headform HIC)+166.4

Hyundai's reference point for x,y,z coordinate correlation (Driver side front outboard seat bolt hole x= 1065 mm , y=-609 mm , and z=-38 mm) to General Dynamic's coordinate system.

DATA SHEET 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:									
Year/Make/Model/Body Style:			2004 Hyundai XG350 4-Door Sedan						
VIN:			KMHFU45E04A273719						
Month & Year of Manufacture:			March 6, 2003(SEE CERTIFICATION LABEL)						
Vehicle Body Color:			Red (Bordeaux)						
Engine Data:	6	Cylinders;	-	CID;	3.5	Liters;	-	cc	
Engine Placement:		x	Longitudinal;	or		-	Lateral		
Transmission:	5	Speed;	-	Manual;	x	Automatic;	--	Overdrive	
Final Drive:	-	Rear Wheel Drive;	x	Front Wheel Drive;	-	Four Wheel Drive			
Odometer Reading:		186	km						
Options:	x	A/C;	x	Power Steering;	x	Pwr.Brakes;	x	Pwr. Windows	
Interior Trim Information :									
1. Seat belt anchorages on both B-Pillars									
2. Front and rear outboard seating positions have grab handles on their side rails									

DATA FROM TIRE PLACARD:									
Tire Pressure (at capacity):				240	kPa FRONT				
				240	kPa REAR				
Recommended Tire Size:				P205/60R16					
Tires on Test Vehicle:	P205/60R16			Manufacturer:	Michelin				
Vehicle Capacity Data:									
Number of Occupants:	2	Front;	3	Rear;	-	3rd Seat;	5	Total	
Type of Front Seats:	x	Bucket;	-	Bench;	-	Split Bench			
Type of Front Seat Back:	-	Fixed;	x	Adjustable with	x	Lever or	-	Knob	
Vehicle Capacity Weight (VCW)=				390	kg (A)				
No. of Occupants x 68 kg. =				340	kg (B)				
Rated Cargo/Luggage Weight (RCLW) =				50	kg (A-B) Max. RCLW = 136 kg.				

DATA SHEET 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:					
Left Front =	530	kg	Left Rear =	322	kg
Right Front =	530	kg	Right Rear =	311	kg
TOTAL FRONT =	1060	kg	TOTAL REAR =	633	kg
% of Total Weight =	62.6	%	% of Total Weight =	37.4	%
TOTAL WEIGHT =		1693	kg		

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:		
Total Test Vehicle Delivered Weight=	1693	kg (A)
+ Rated Cargo/Luggage Weight =	50	kg (B)
TEST VEHICLE TARGET WEIGHT =	1743	kg (A+B)

WEIGHT OF TEST VEHICLE (FULLY LOADED):					
Left Front =	528	kg	Left Rear =	346	kg
Right Front =	528	kg	Right Rear =	336	kg
TOTAL FRONT =	1056	kg	TOTAL REAR =	682	kg
% of Total Weight =	60.8	%	% of Total Weight =	39.2	%
TOTAL TEST WEIGHT =		1738			
Weight of vehicle secured in test vehicles cargo area =		50	kg		

TEST VEHICLE ATTITUDE (all dimensions in millimeters):				
AS DELIVERED:	Left Front	710	Left Rear	715
	Right Front	710	Right Rear	708
FULLY LOADED:	Left Front	710	Left Rear	701
	Right Front	710	Right Rear	695
Test Vehicle Wheelbase:		2750	millimeters	

TEST VEHICLE PITCH AND ROLL ANGLES:				
AS DELIVERED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	0.7↓	Front Bumper	0.2↓
	Right Door Sill	0.4↑	Rear Bumper	0.2↓
FULLY LOADED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	0.4↓	Front Bumper	0.2↓
	Right Door Sill	0.1↑	Rear Bumper	0.2↓
AS TESTED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	0.6↓	Front Bumper	0.2↓
	Right Door Sill	0.4↑	Rear Bumper	0.2↓

DATA SHEET 2-3
TARGET MEASUREMENT REFERENCE SHEET

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Measurements	Description	Left Side	Right Side
M	Seat fore / Aft travel (Front seats)	225	225
T°	Horizontal angle {CG-F1 (Left seat) to (Right A-pillar)}	108	-
A1°	360° - T°	252	-
W°	Horizontal angle {CG-F2 (Left seat) to (Left A-pillar)}	204	-
A2°	A2° = W°	204	-
U°	Horizontal angle {CG-F2 (Left seat) to (Left B-pillar)}	282	-
B1°	B1° = U°	282	-
V°	Horizontal angle {CG-FR (Left seat) to (Right B-pillar)}	200	-
B2°	B2° = V°	200	-
W°	Horizontal angle {CG-F2 (Right seat) to (Right A-pillar)}	-	156
A1°	A1° (Right) = W° (Right)	-	156
T°	Horizontal angle {CG-F1 (Right seat) to (Left A-pillar)}	-	252
A2°	360° - T° (Right)	-	108
V°	Horizontal angle {CG-FR (Right seat) to (Right B-pillar)}	-	160
B1°	B1° (Right) = V° (Right)	-	160
U°	Horizontal angle {CG-F2 (Right seat) to (Right B-pillar)}	-	78
B2°	B2° (Right) = U° (Right)	-	78
J	A-pillar {(Plane 3) - (Plane 5)}	310	310
J/2	J ÷ 2	155	155
D1	Upper Roof {(Plane A) - (Plane B)}	1560	
D1/2	D1 ÷2	780	
D2	Upper Roof {(Plane C) - (Plane D)}	1238	
D2/2	D2 ÷2	619	
.35D1	.35 x D1	546	
.35D2	.35 x D2	433.3	
N	B-pillar {(BPR) - (lowest point on the daylight opening forward of B-pillar)}	400	400
N/2	B-pillar {(BP3) - (lowest point on the daylight opening forward of B-pillar)}	200	200
N/4	B-pillar {(BP3) - (lowest point on the daylight opening forward of B-pillar)}	100	100
Q	Other-pillar {(OPR) - (lowest point on the daylight opening forward of O-pillar)}	-	-
Q/2	Other-pillar {(OP2) - (lowest point on the daylight opening forward of O-pillar)}	-	-
D	{(Corner of roof area, point 7) - (roof area center, point M)}	700	700
3D/7	(3 x D) ÷ 7	300	300
MM	Widest door opening of slider door	-	-
M	MM ÷ 2	-	-

DATA SHEET 2-4

APPROACH ANGLE LIMITS

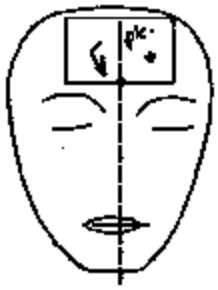
Left Side					Right Side				
Target Code	Horizontal Angles (deg.)		Vertical Angles (deg.)		Target Code	Horizontal Angles (deg.)		Vertical Angles (deg.)	
	Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	Minimum	Maximum
AP1	204	252	-5	45	AP1	108	156	-5	45
AP2	204	252	-5	43	AP2	108	156	-5	43
AP3	204	252	-5	45	AP3	108	156	-5	45
BP1	200	282	-10	22	BP1	78	160	-10	22
BP2	ANY		0	7	BP2	ANY		0	7
BP3	200	282	-10	-9	BP3	78	160	-10	-9
BP4	200	282	-10	-10	BP4	78	160	-10	-10
OP1	-		-	-	OP1	-		-	-
OP2	-		-	-	OP2	-		-	-
RP1	270	345	-10	9	RP1	15	90	-10	9
RP2	270	345	-10	14	RP2	15	90	-10	14
FH1	180		0	50	FH1	180		0	50
FH2	180		0	50	FH2	180		0	50
RH	360		0	50	RH	0		0	50
SR1	270		0	40	SR1	90		0	40
SR2A	270		0	50	SR2A	90		0	50
SR2B	270		0	50	SR2B	90		0	50
SR3	270		0	41	SR3	90		0	41
URAP	ANY		0	50	URAP	ANY		0	50
URBP	ANY		0	47	URBP	ANY		0	47
URRP	ANY		0	47	URRP	ANY		0	47

Note : BP2 target location – Seat belt anchorage

DATA SHEET 2-5

SUMMARY TARGET IMPACT LOCATION ON FMH

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)



R RIGHT SIDE OF FACE

TARGET	Distance Above Point 0 (mm)	Distance Over From Pt. O (mm)
BP4	17	8 to the left
SR3	20	17 to the right
RP2	23	6 to the left
BP1	35	0
AP3	15	0
AP1	11	10 to the right
BP2	8	3 to the left
URBP	49	5 to the left
URRP	22	3 to the right
AP2	21	7 to the right

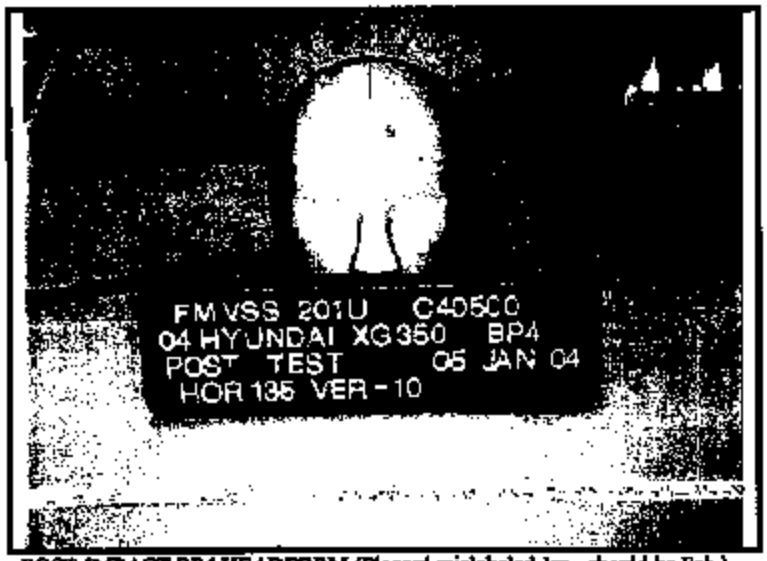
SECTION 3

SUMMARY OF TEST RESULTS AND DATA PLOTS

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003 (SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	01
Test Date:	February 5, 2004
Target Location:	B-Pillar
Target Code:	BP4
Horizontal Impact Angle:	135°
Vertical Impact Angle:	-10°
Ambient Temperature:	20°C
Relative Humidity:	14
Time of Impact:	10:55
Headform Number:	0805

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	8		mm right	x	mm left
On Centerline	17	mm up			



POST-IMPACT BP4 HEADFORM (Placard mislabeled Jan., should be Feb.)

Free Motion HIC	667.7
HIC(d)	670.2
Impact Velocity (kph)	23.50
HIC T1 (msec)	1.1
HIC T2 (msec)	9.6

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - BP4

FMH Headform 805

Location: BP4

Test Date: February 05, 2004

Work File: BP4

TEST RESULTS

Lab Temperature: 20 C

Lab Humidity: 14 %

Velocity at Impact: 23.50 KPH

Free Flight Distance: 214.34 mm

HICd: 670.2

HIC (36ms): 667.7

t1: 1.1 msec

t2: 9.6 msec

Duration: 8.5 msec

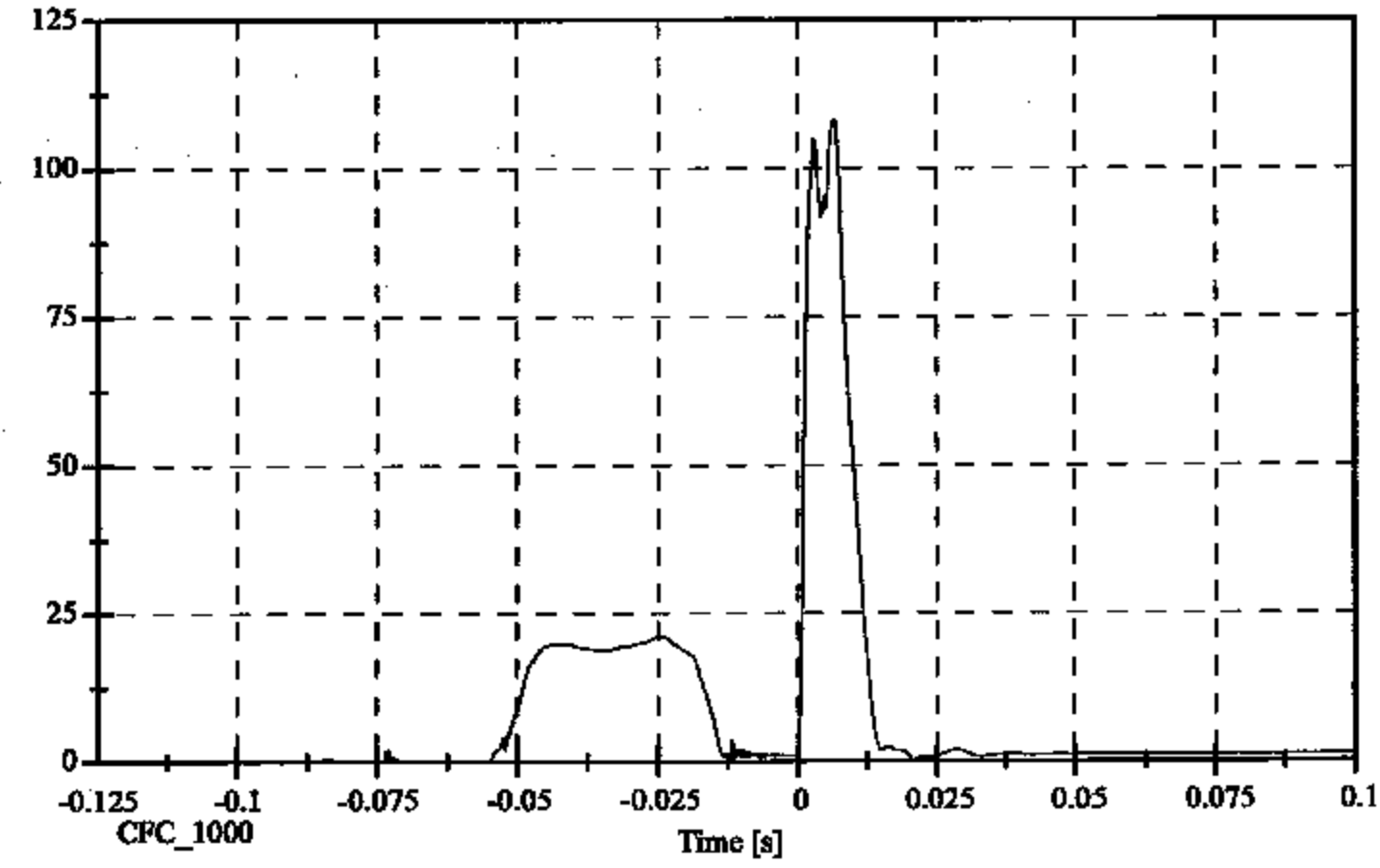
Average Acceleration: 8.5 g

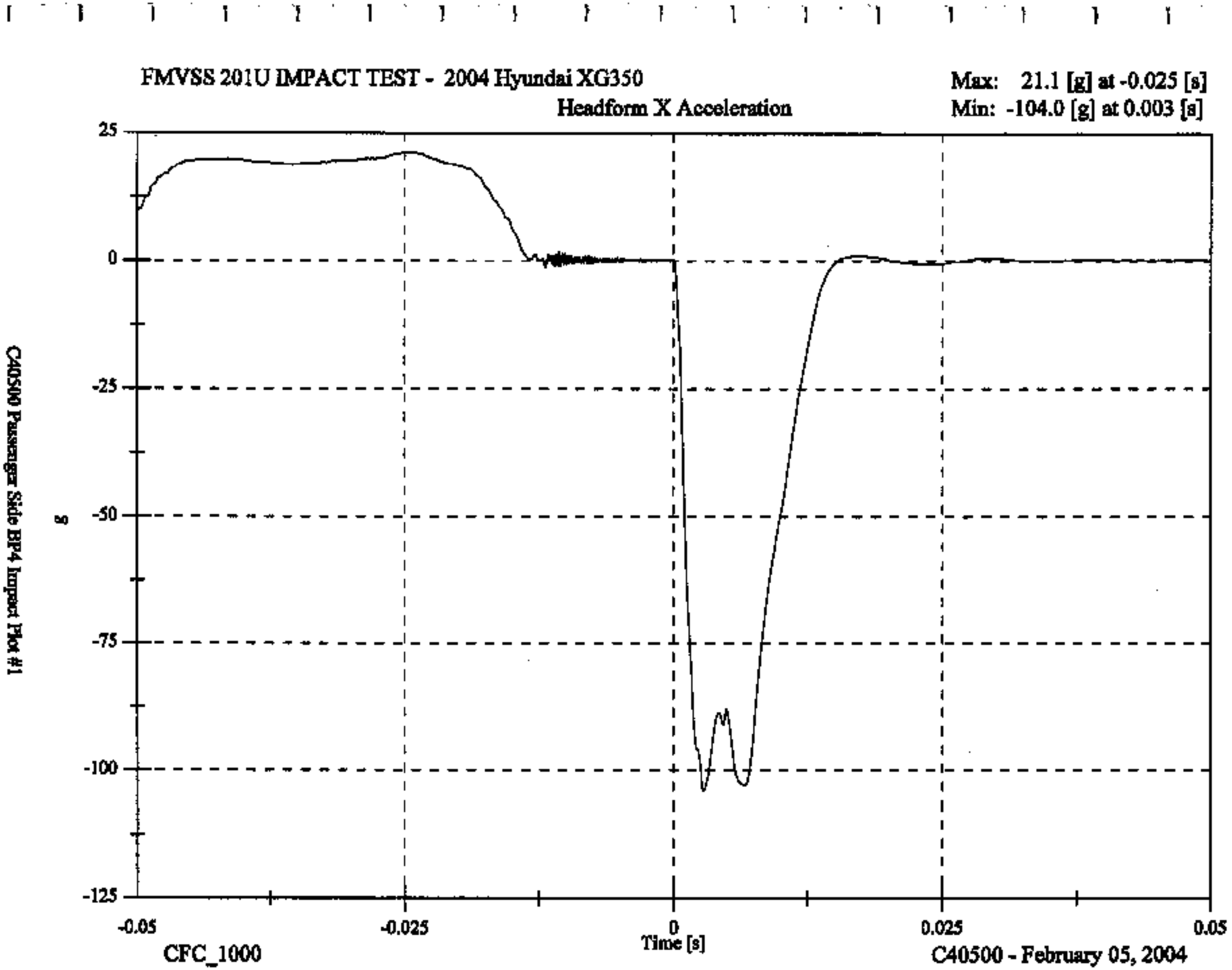
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

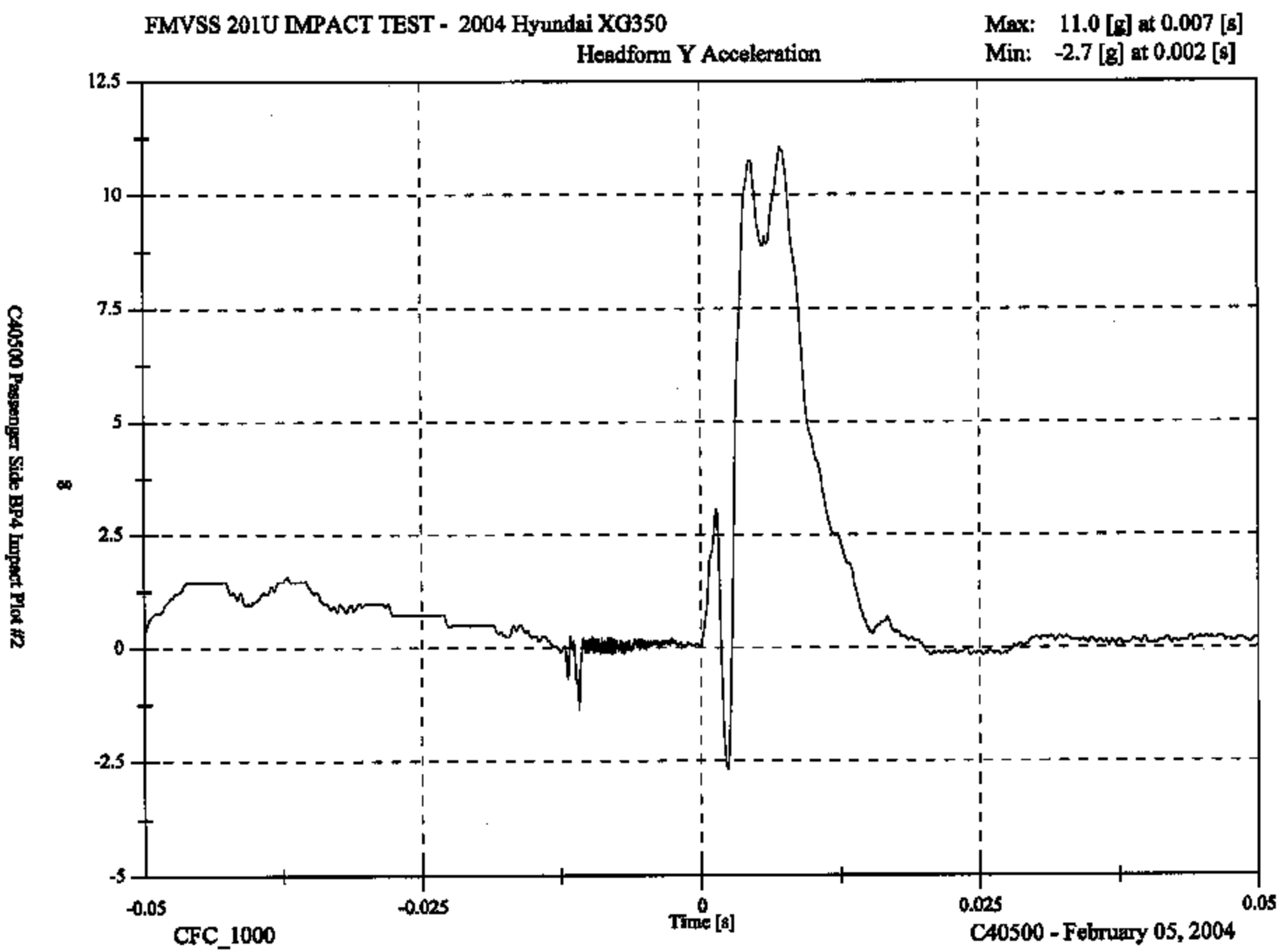
Headform Resultant

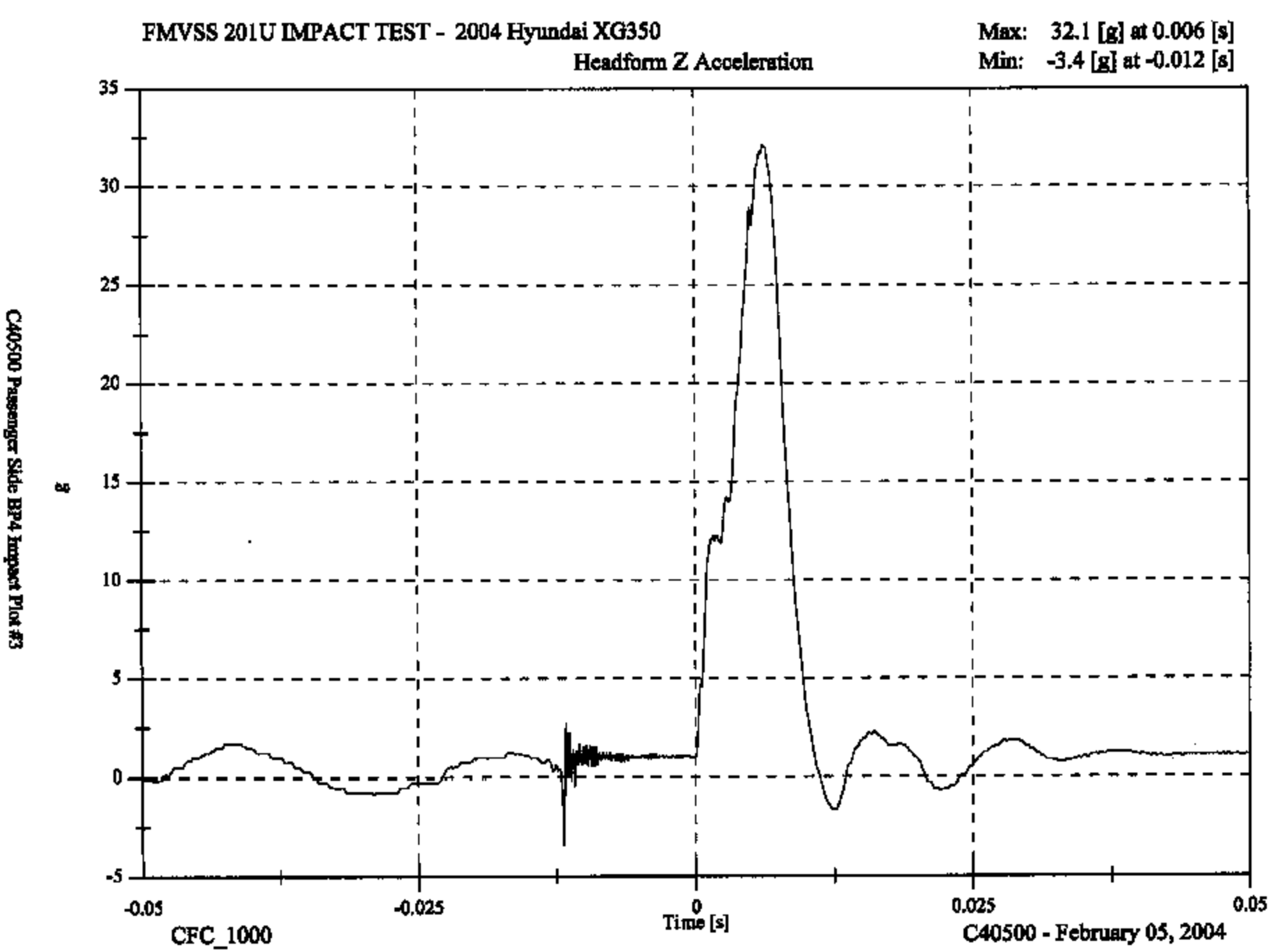
Max: 108.3 [g] at 0.007 [s]

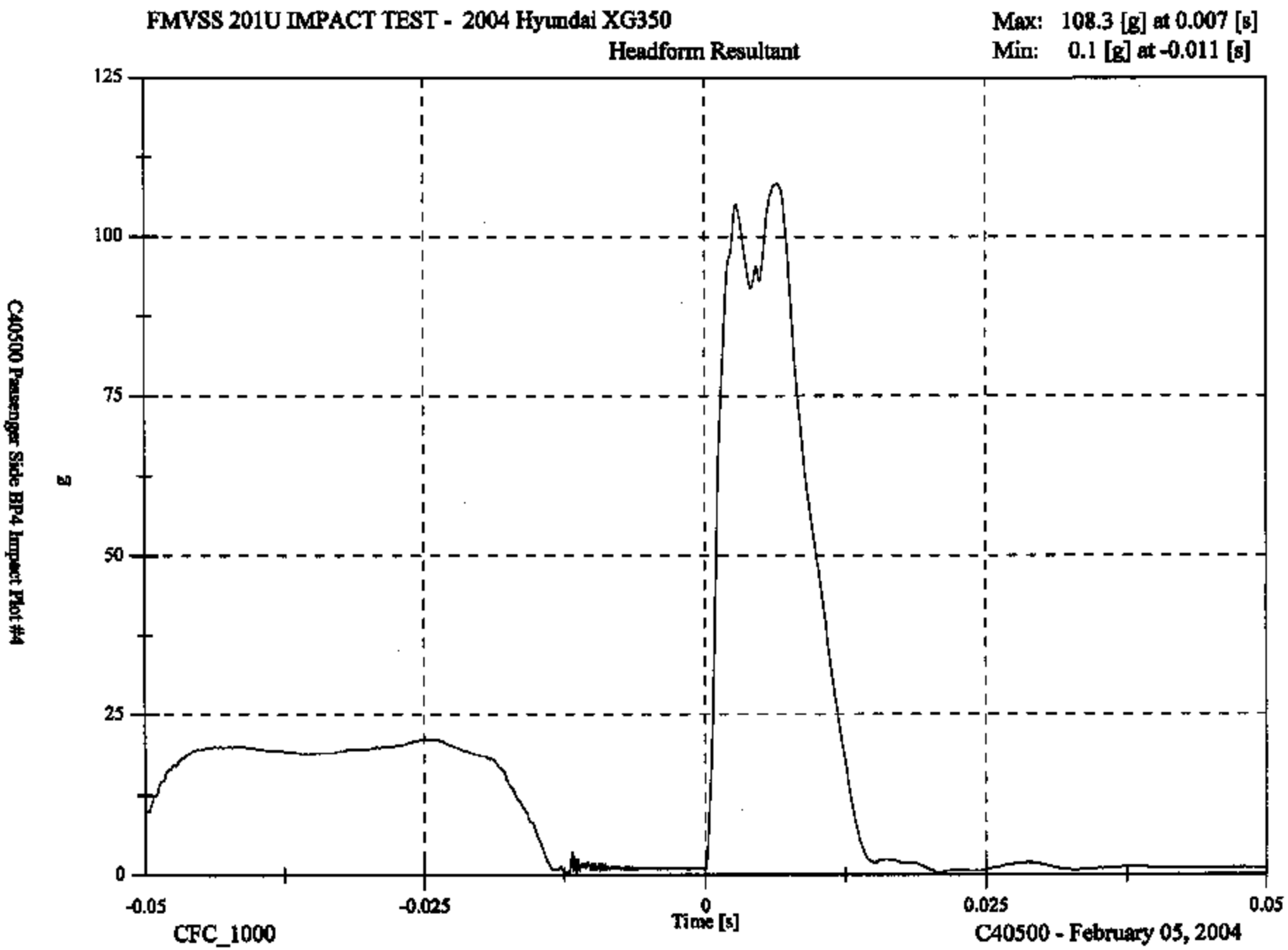
Min: 0.0 [g] at -0.089 [s]




FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 21.1 [g] at -0.025 [s]
Min: -104.0 [g] at 0.003 [s]
25
0
-25
-50
-75
-100
-125
g
C40500 Passenger Side BP4 Impact Plot #1
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Y Acceleration
Max: 11.0 [g] at 0.007 [s]
Min: -2.7 [g] at 0.002 [s]
12.5
10
7.5
5
2.5
0
-2.5
-5
g
-0.05
-0.025
0
0.025
0.05
Time [s]
C40500 Passenger Side BP4 Impact Plot #2
CFC_1000
C40500 - February 05, 2004

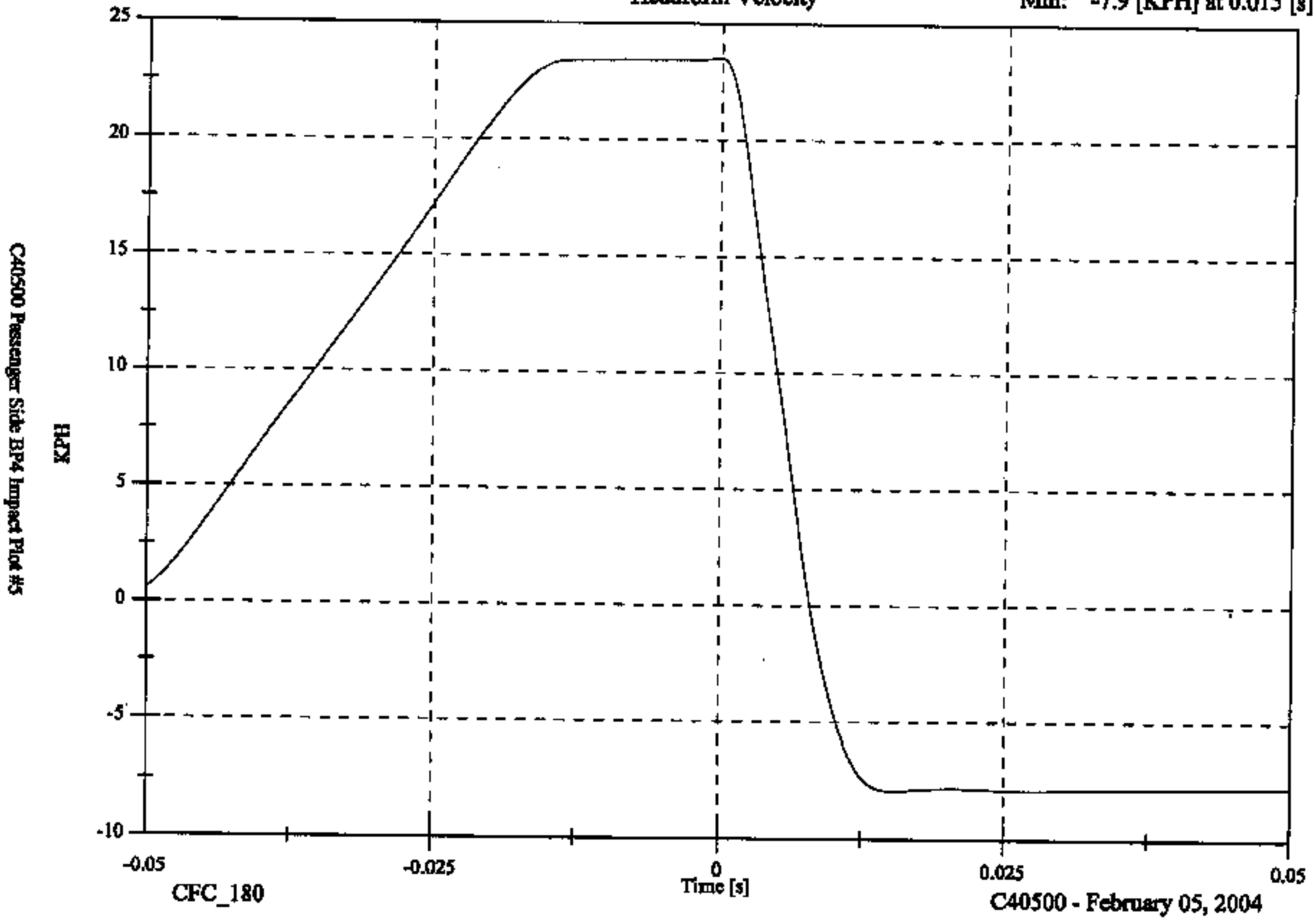

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Z Acceleration
Max: 32.1 [g] at 0.006 [s]
Min: -3.4 [g] at -0.012 [s]
C40500 Passenger Side BP4 Impact Plot #3
g
35
30
25
20
15
10
5
0
-5
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

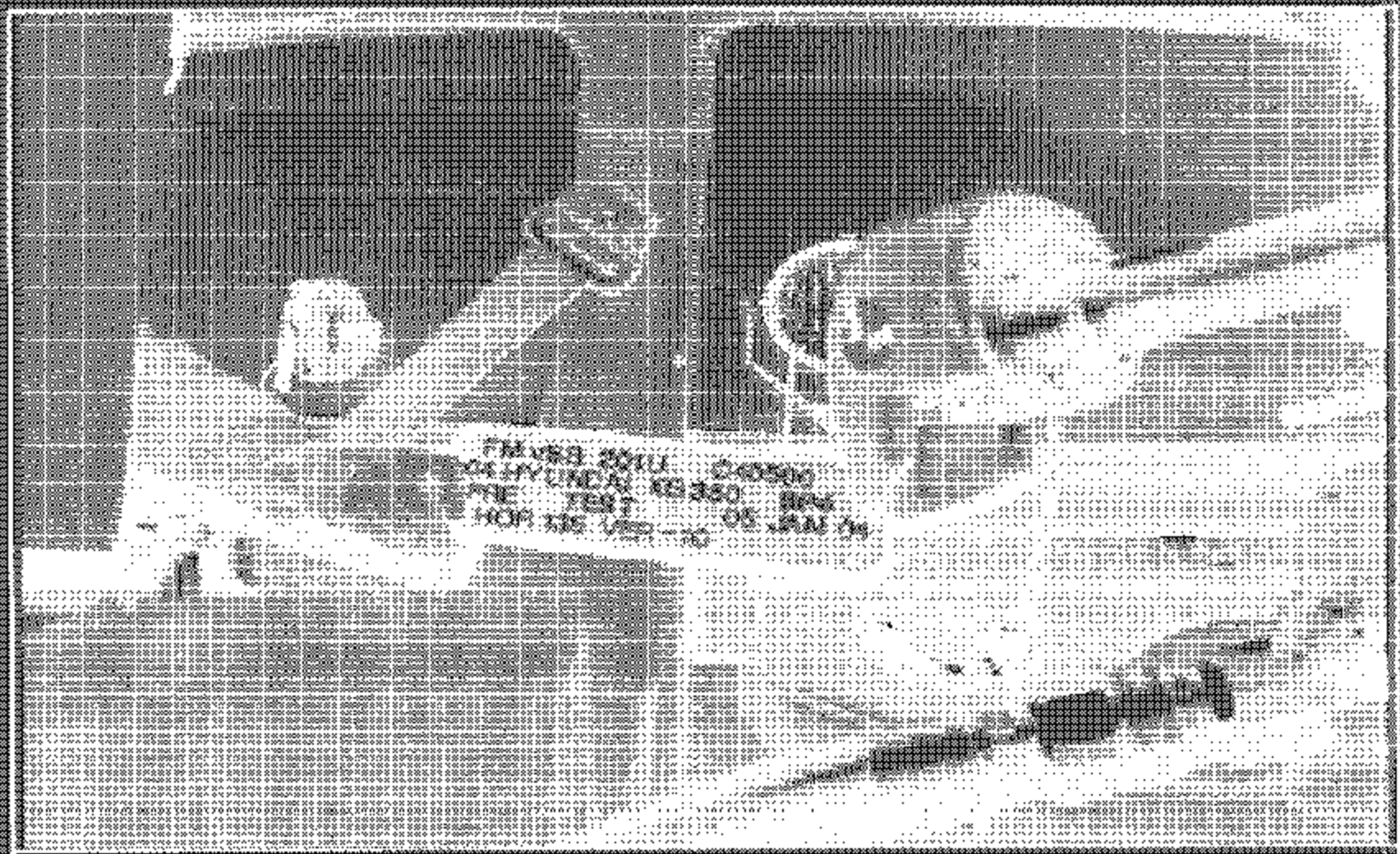

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 108.3 [g] at 0.007 [s]
Min: 0.1 [g] at -0.011 [s]
125
100
75
50
25
0
g
C40500 Passenger Side BP4 Impact Plot #4
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

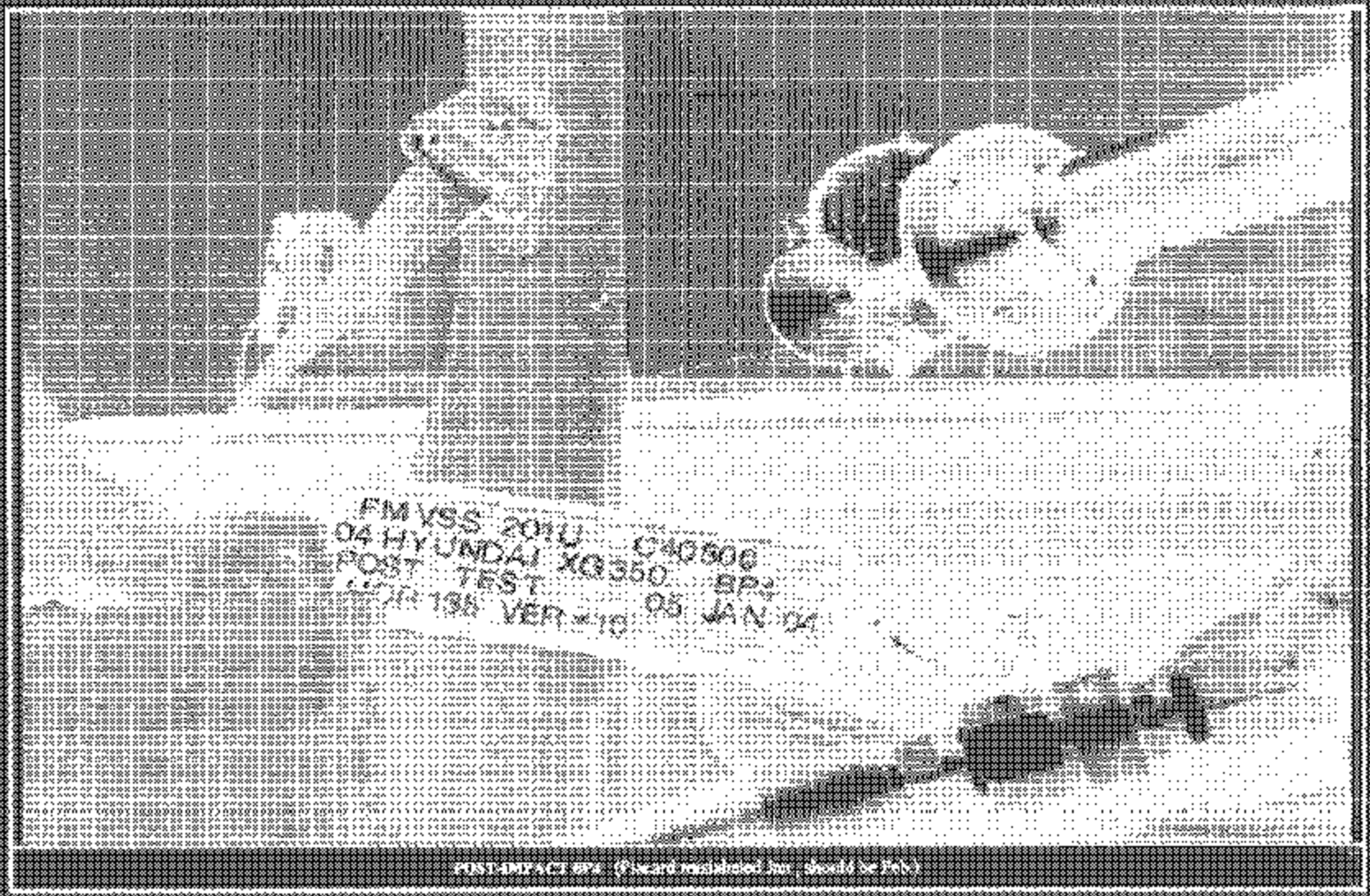
Max: 23.5 [KPH] at -0.000 [s]
Min: -7.9 [KPH] at 0.015 [s]





PRE-IMPACT TEST: (Placard mistakenly 3m, should be 9 m.)

8730-06



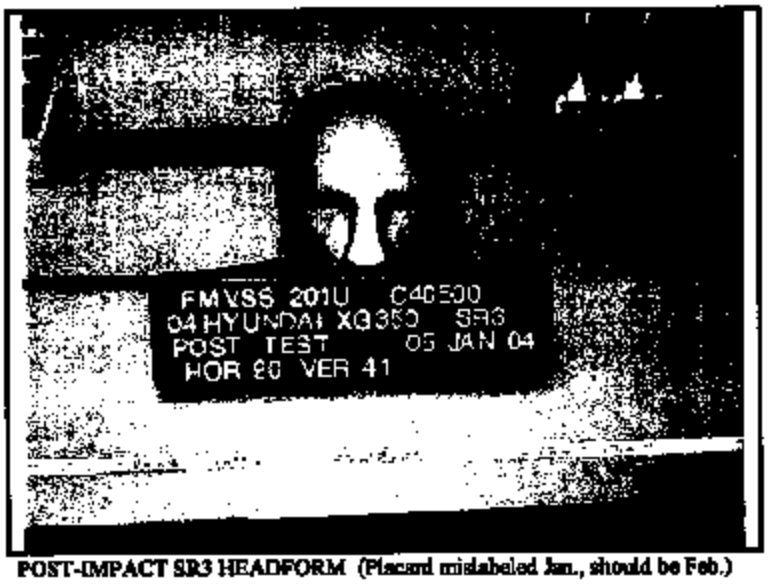
POST-IMPACT #4 (Placard mislabeled Jan. should be Feb.)

K730-16

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	02
Test Date:	February 5, 2004
Target Location:	Side Rail Grab Handle
Target Code:	SR3
Horizontal Impact Angle:	90°
Vertical Impact Angle:	41°
Ambient Temperature:	20°C
Relative Humidity:	14
Time of Impact:	11:40
Headform Number:	0355

Impact Point Description (from lower midpoint on midsagittal line)				
On Centerline	17	x	mm right	mm left
On Centerline	20		mm up	



POST-IMPACT SR3 HEADFORM (Placard mislabeled Jan., should be Feb.)

Free Motion HIC	424.3
HIC(d)	486.5
Impact Velocity (kph)	23.47
HIC T1 (msec)	1.4
HIC T2 (msec)	9.7

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - SR3

FMH Headform 0355

Location: SR3

Test Date: February 05, 2004

Work File: SR3

TEST RESULTS

Lab Temperature: 20 C

Lab Humidity: 14 %

Velocity at Impact: 23.47 KPH

Free Flight Distance: 219.82 mm

HICd: 486.5

HIC (36ms): 424.3

t1: 1.4 msec

t2: 9.7 msec

Duration: 8.2 msec

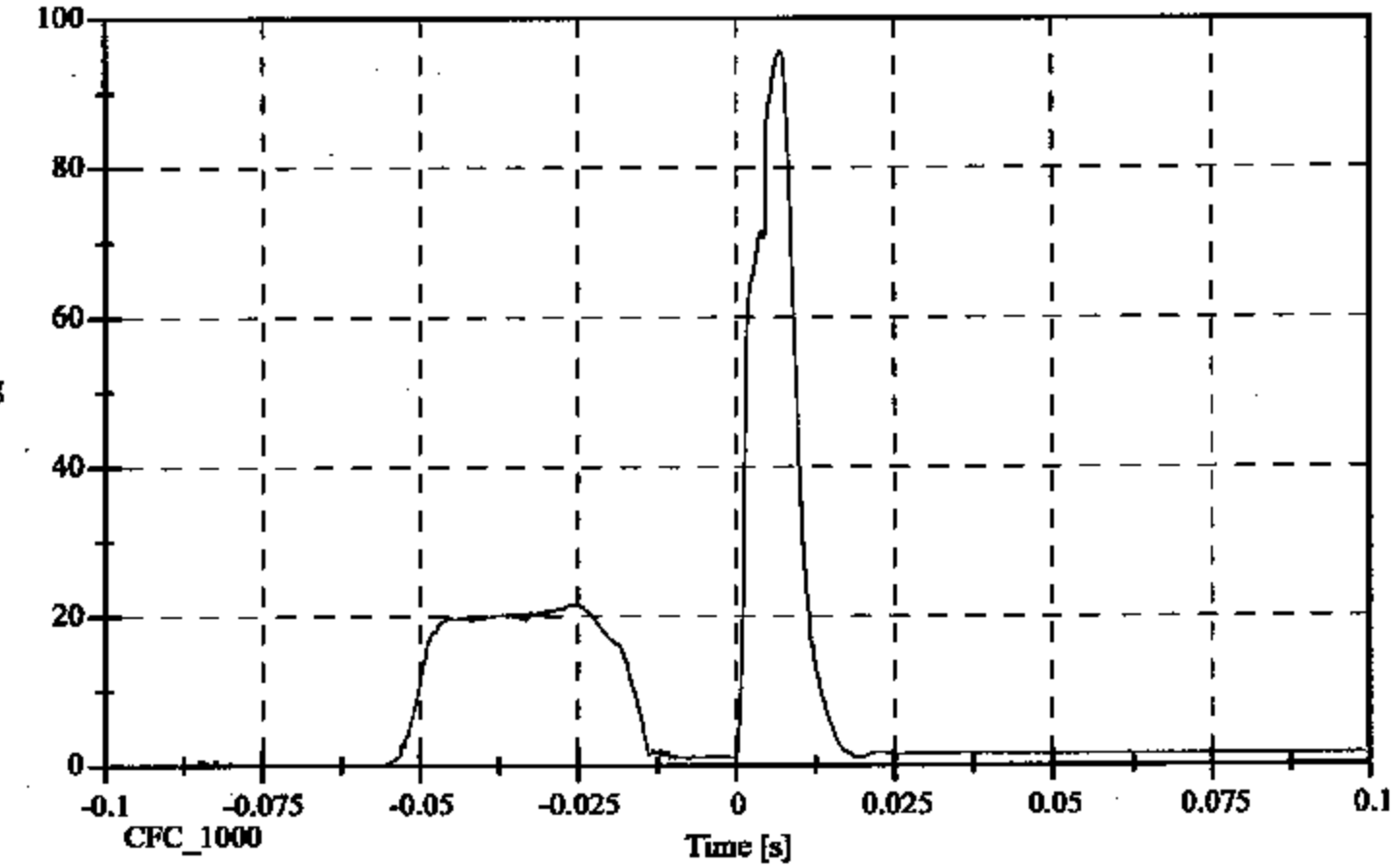
Average Acceleration: 8.0 g

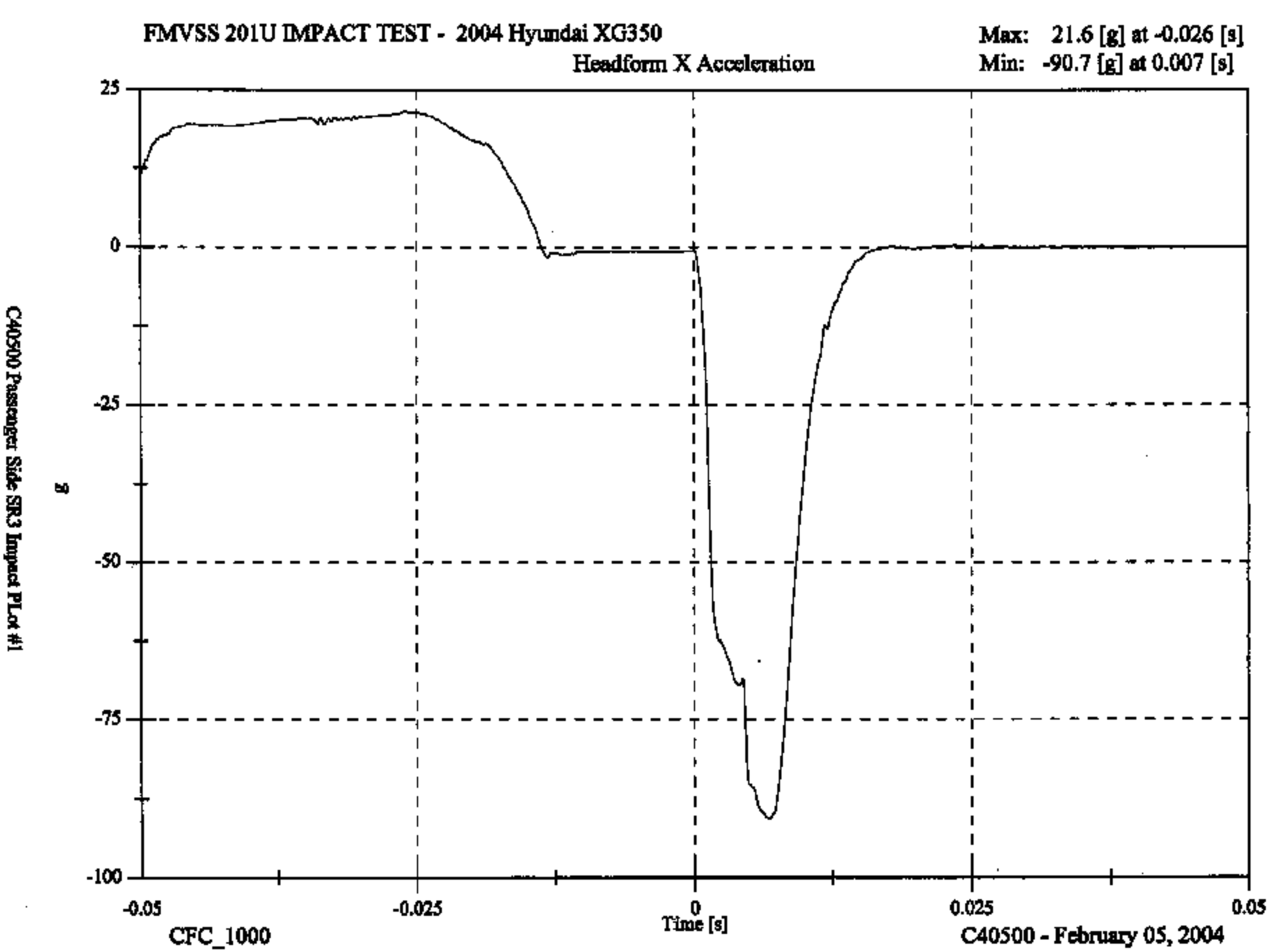
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

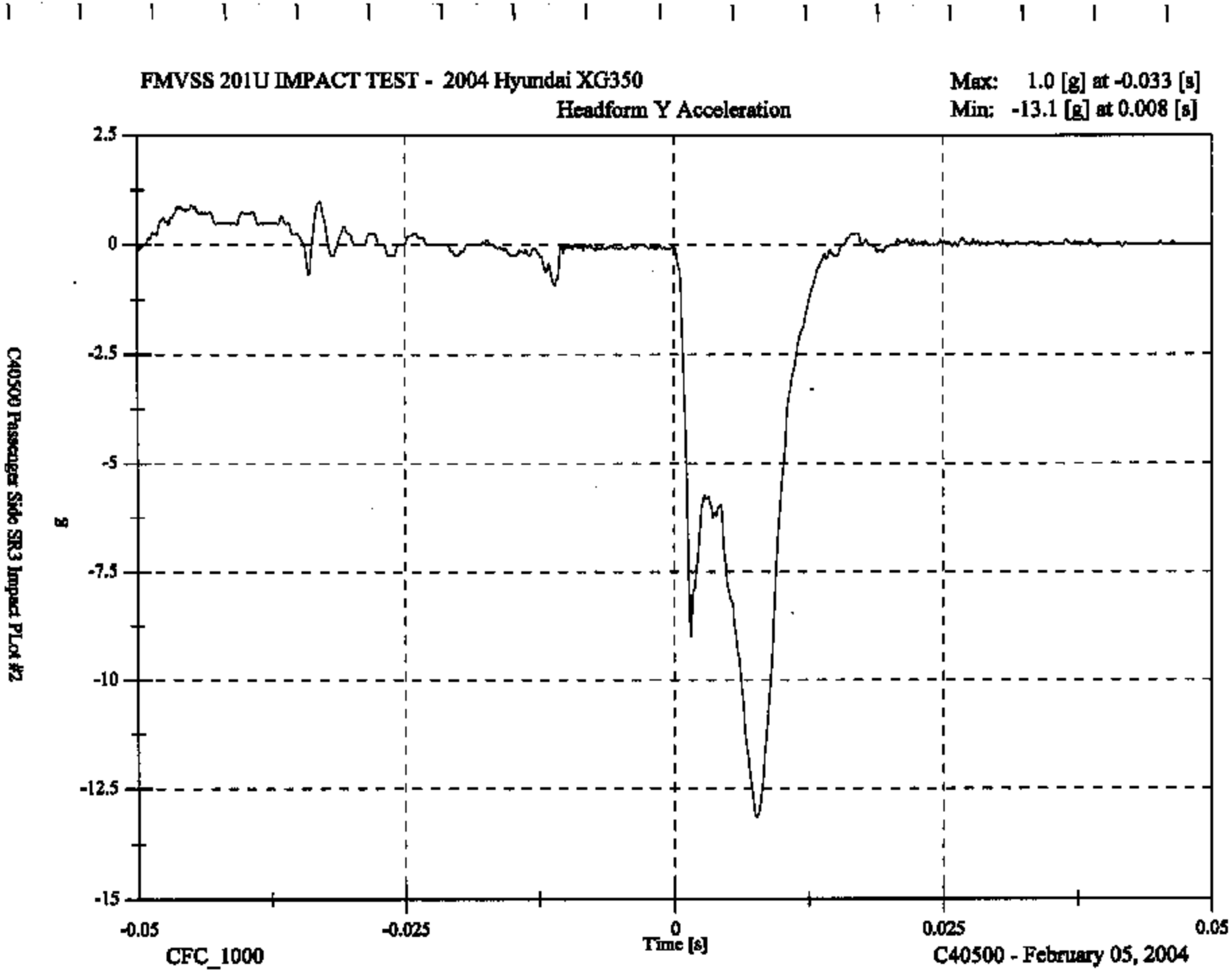
Headform Resultant

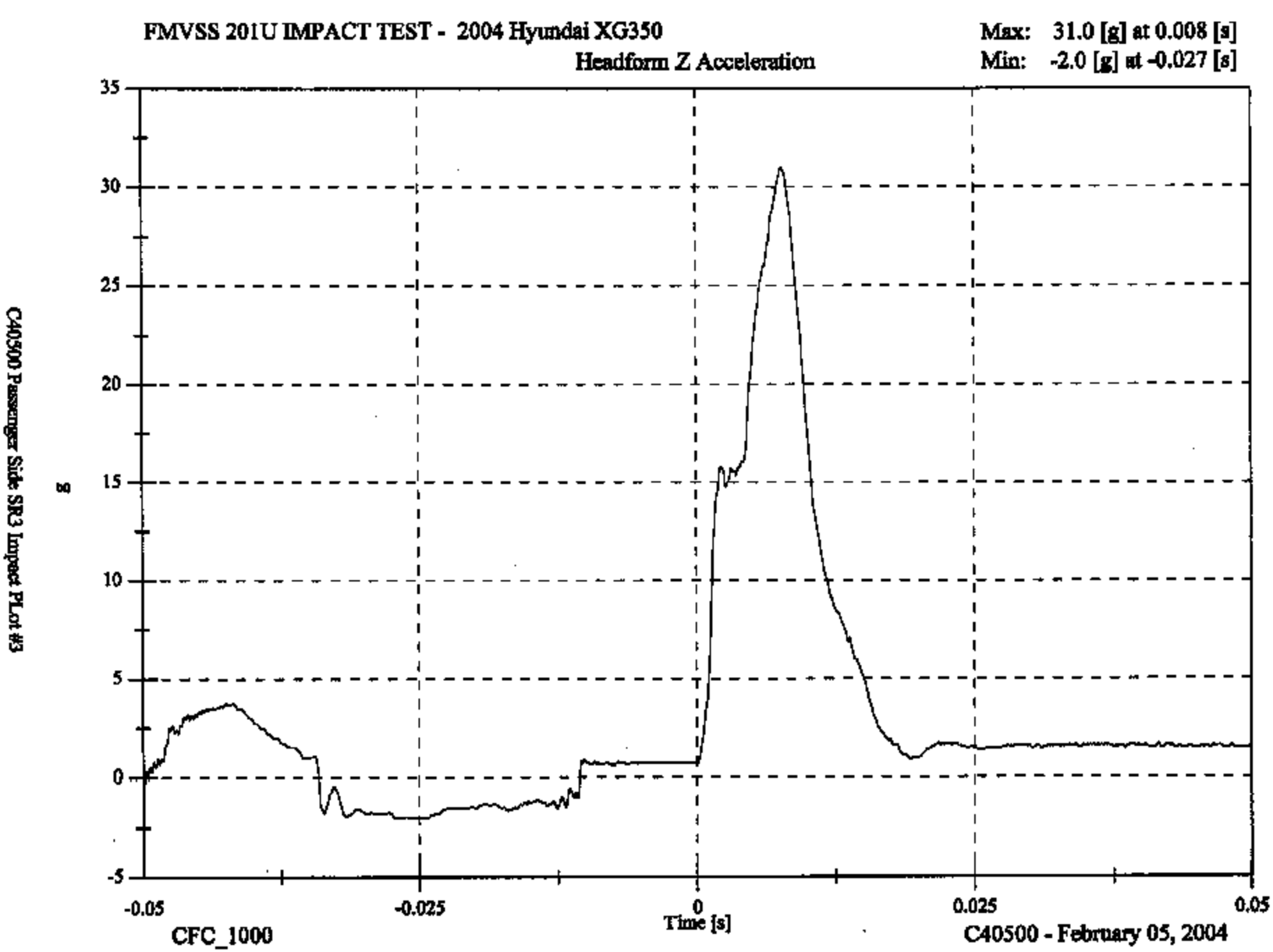
Max: 95.8 [g] at 0.007 [s]

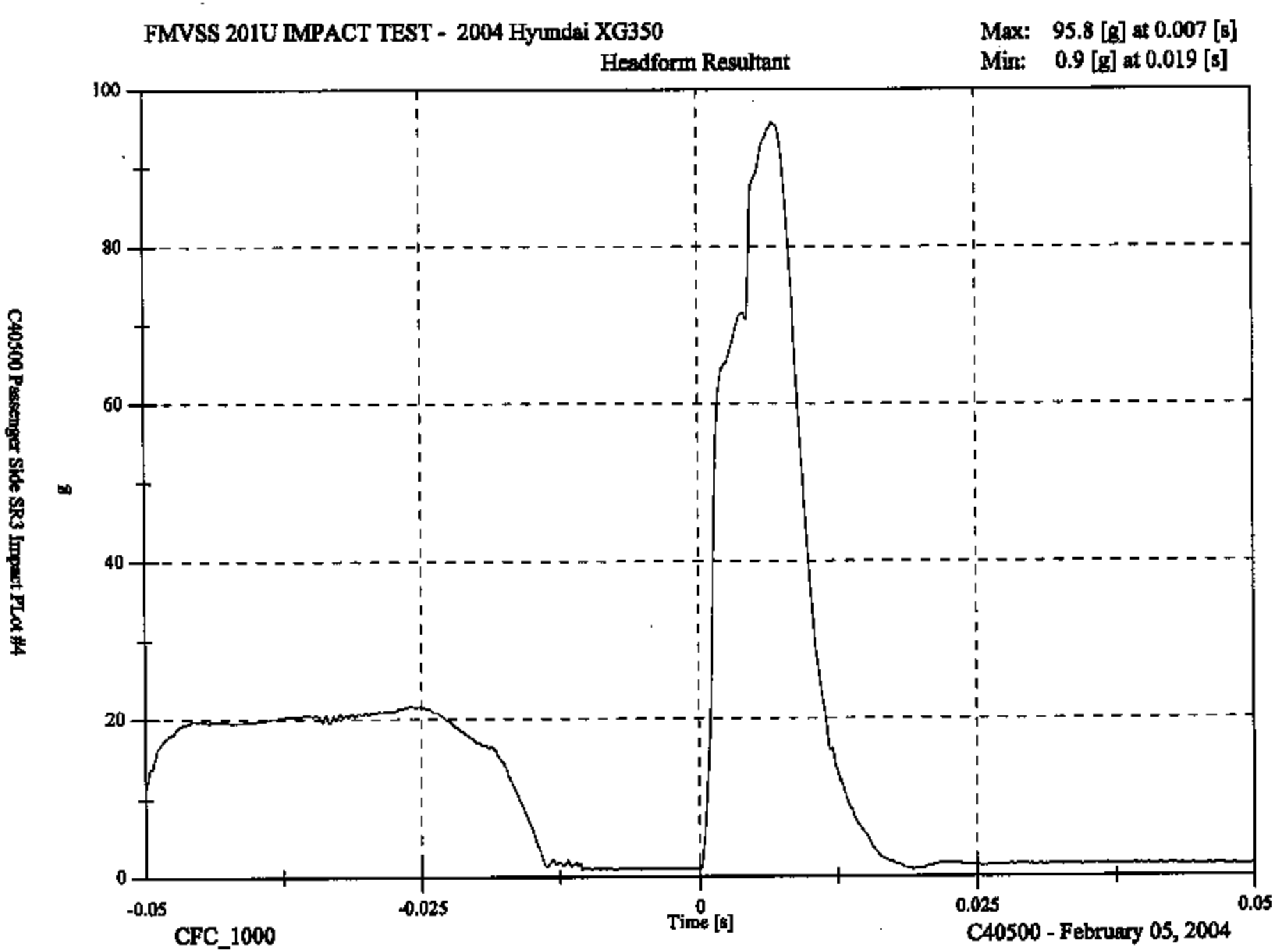
Min: 0.0 [g] at -0.073 [s]




FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 21.6 [g] at -0.026 [s]
Min: -90.7 [g] at 0.007 [s]
25
0
-25
-50
-75
-100
g
C40500 Passenger Side SR3 Impact PLot #1
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Y Acceleration
Max: 1.0 [g] at -0.033 [s]
Min: -13.1 [g] at 0.008 [s]
2.5
0
-2.5
-5
-7.5
-10
-12.5
-15
g
C40500 Passenger Side SR3 Impact PLot #2
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Z Acceleration
Max: 31.0 [g] at 0.008 [s]
Min: -2.0 [g] at -0.027 [s]
C40500 Passenger Side SR3 Impact PLot #3
g
35
30
25
20
15
10
5
0
-5
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

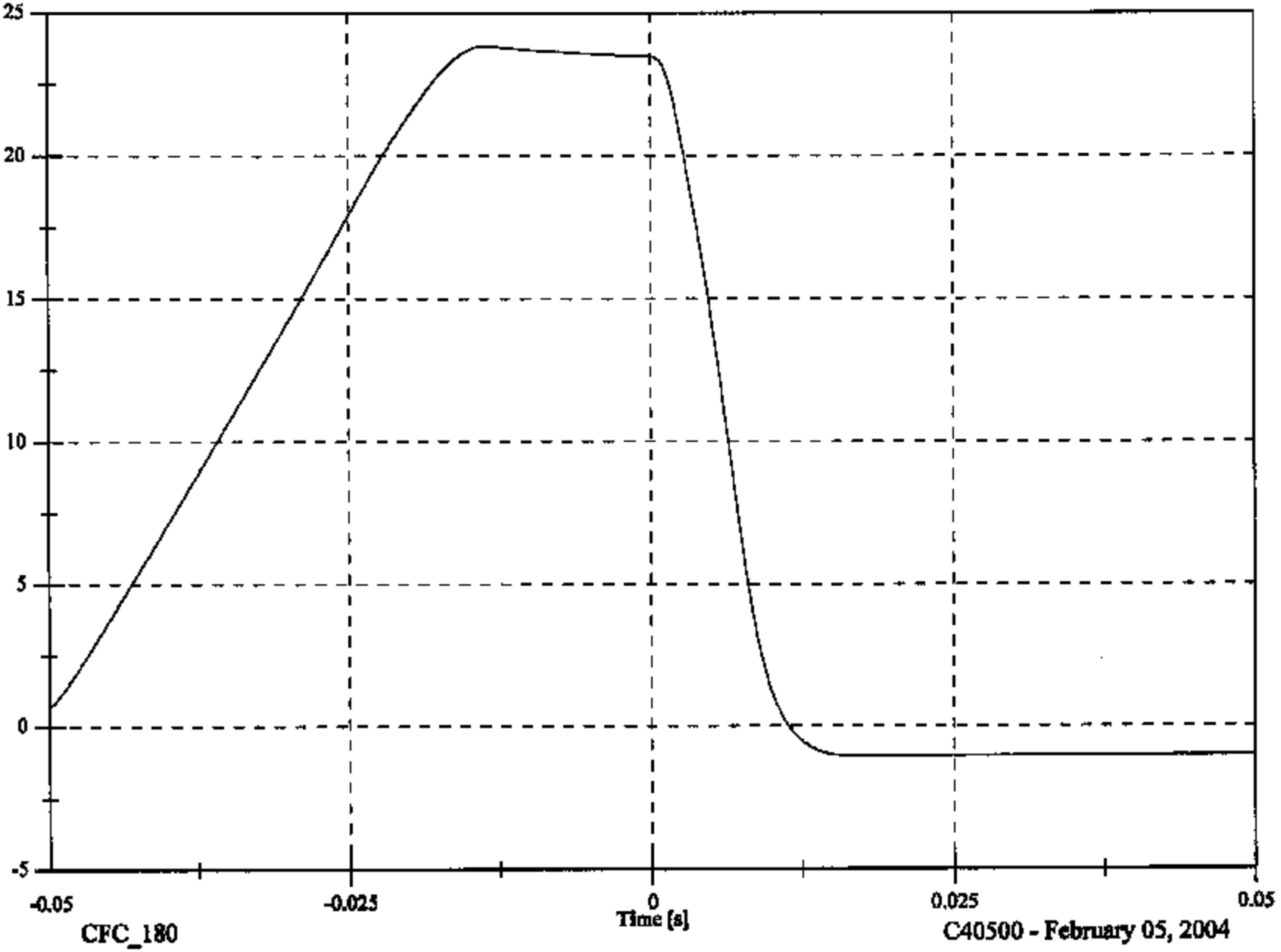

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 95.8 [g] at 0.007 [s]
Min: 0.9 [g] at 0.019 [s]
100
80
60
40
20
0
g
C40500 Passenger Side SR3 Impact PLot #4
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

Max: 23.8 [KPH] at -0.014 [s]

Min: -1.1 [KPH] at 0.021 [s]



C40500 Passenger Side SR3 Impact Plot #5

CFC_180

C40500 - February 05, 2004

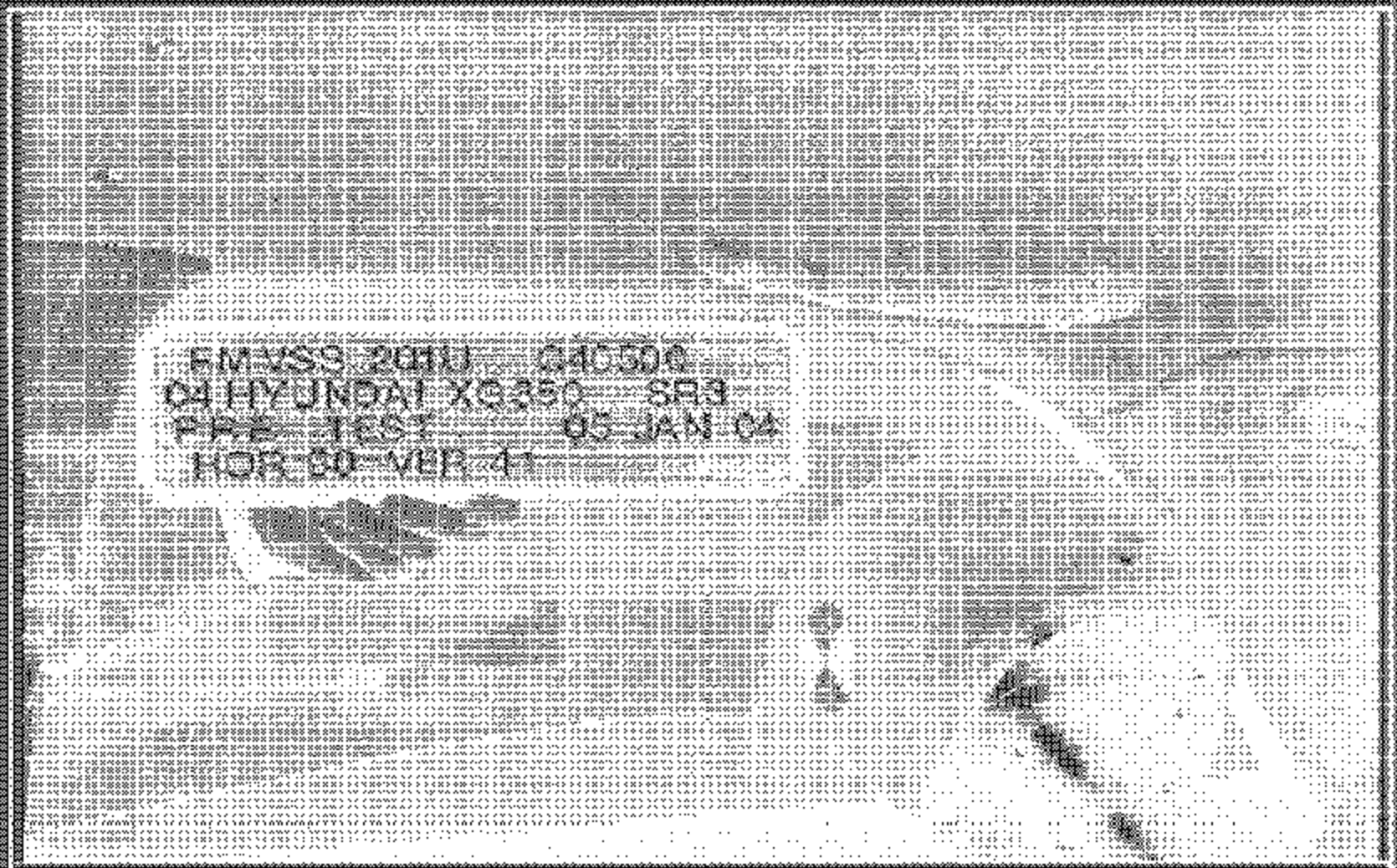
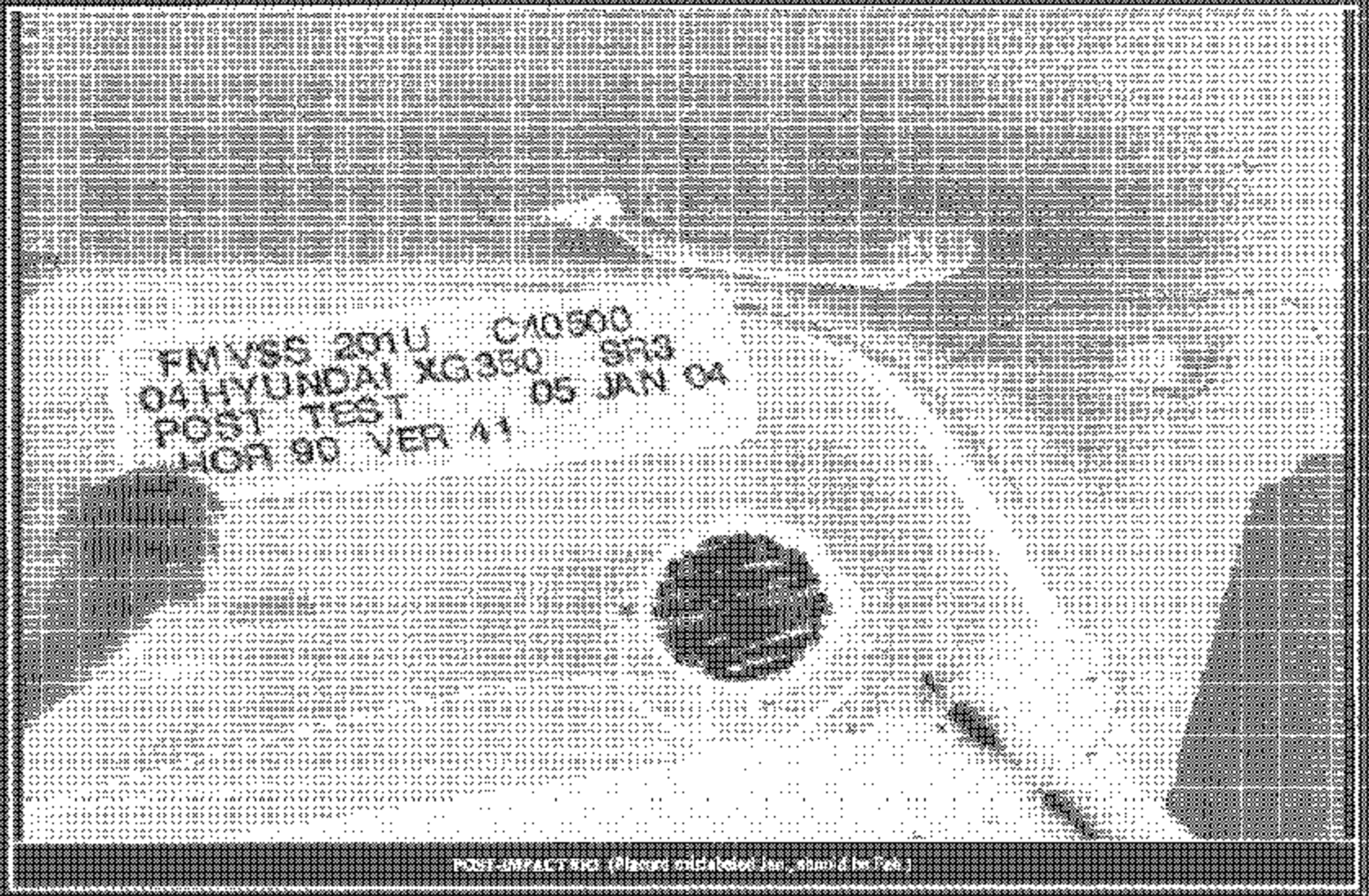


FIG. 3 (Prior Art)

3750.06



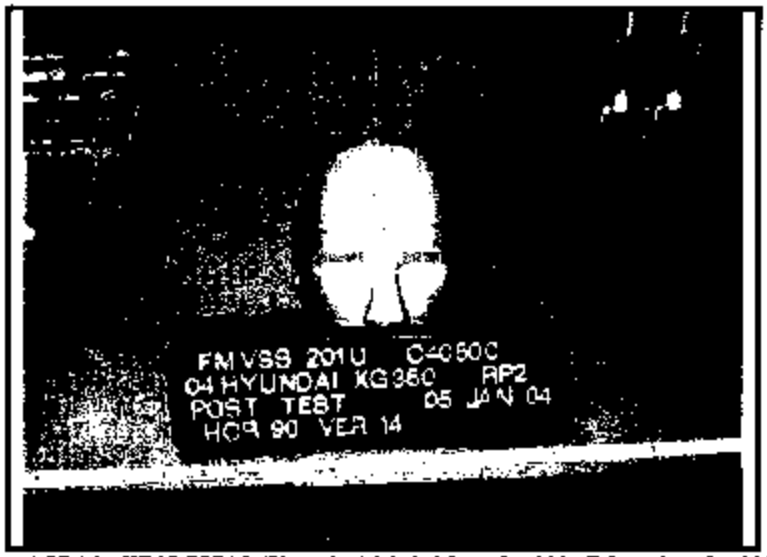
POST-IMPACT VIEW (Placard installation bar, shown for Test)

871U-06

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003 (SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	03
Test Date:	February 5, 2004
Target Location:	Rear Pillar
Target Code:	RP2
Horizontal Impact Angle:	79°
Vertical Impact Angle:	14°
Ambient Temperature:	20°C
Relative Humidity:	14
Time of Impact:	13:30
Headform Number:	1255

Impact Point Description (from lower midpoint on midsagittal line)				
On Centerline	6	[ ]	mm right	[x] mm left
On Centerline	23	mm up		



POST-IMPACT RP2 HEADFORM (Placard mislabeled Jan., should be Feb. and 90 should be 79)

Free Motion HIC	546.0
HIC(d)	578.3
Impact Velocity (kph)	23.68
HIC T1 (msec)	4.3
HIC T2 (msec)	13.0

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - RP2

FMH Headform 1255

Location: RP2

Test Date: February 05, 2004

Work File: RP2

TEST RESULTS

Lab Temperature: 20 C

Lab Humidity: 14 %

Velocity at Impact: 23.68 KPH

Free Flight Distance: 219.28 mm

HICd: 578.3

HIC (36ms): 546.0

t1: 4.3 msec

t2: 13.0 msec

Duration: 8.7 msec

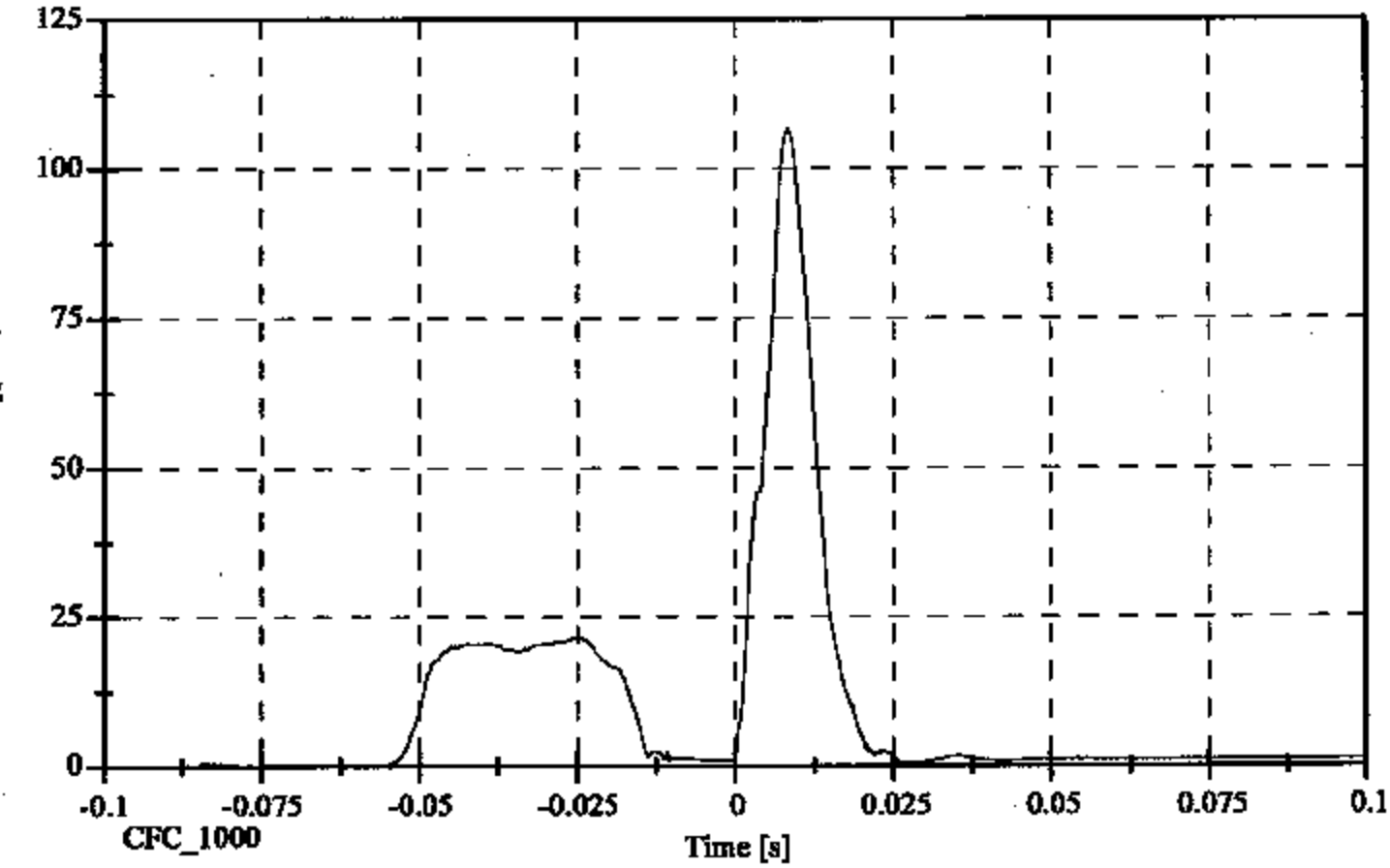
Average Acceleration: 8.9 g

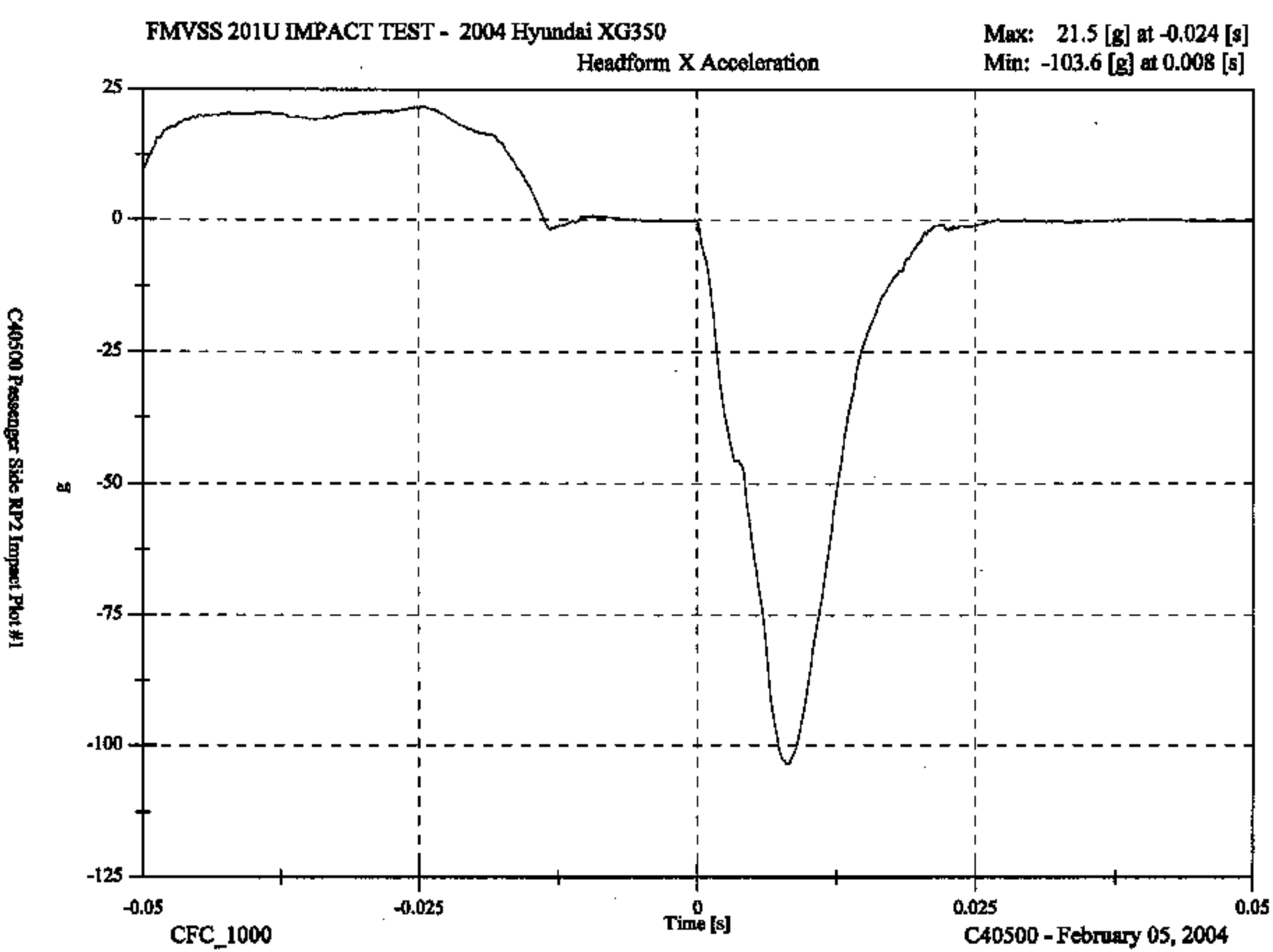
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

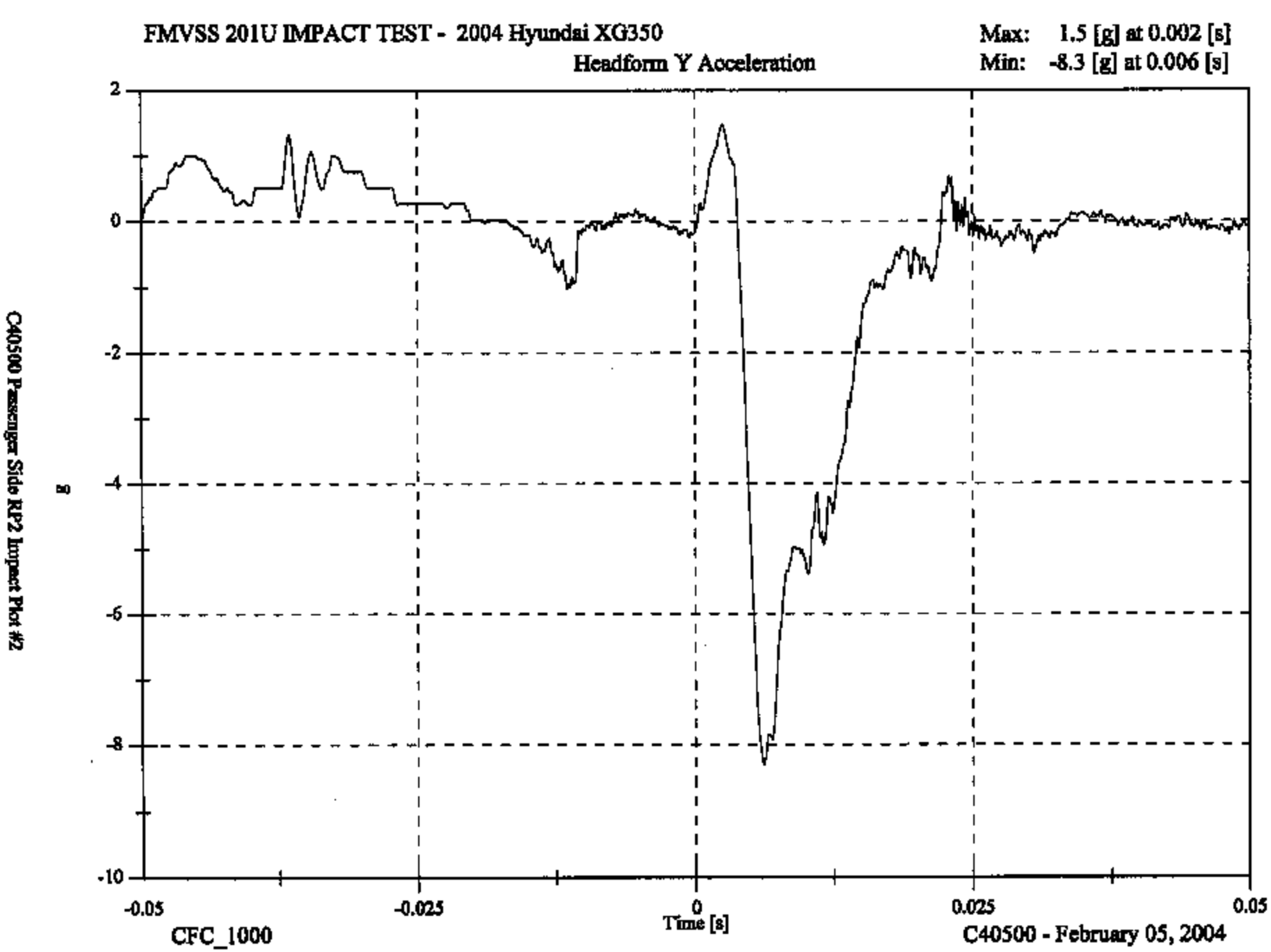
Headform Resultant

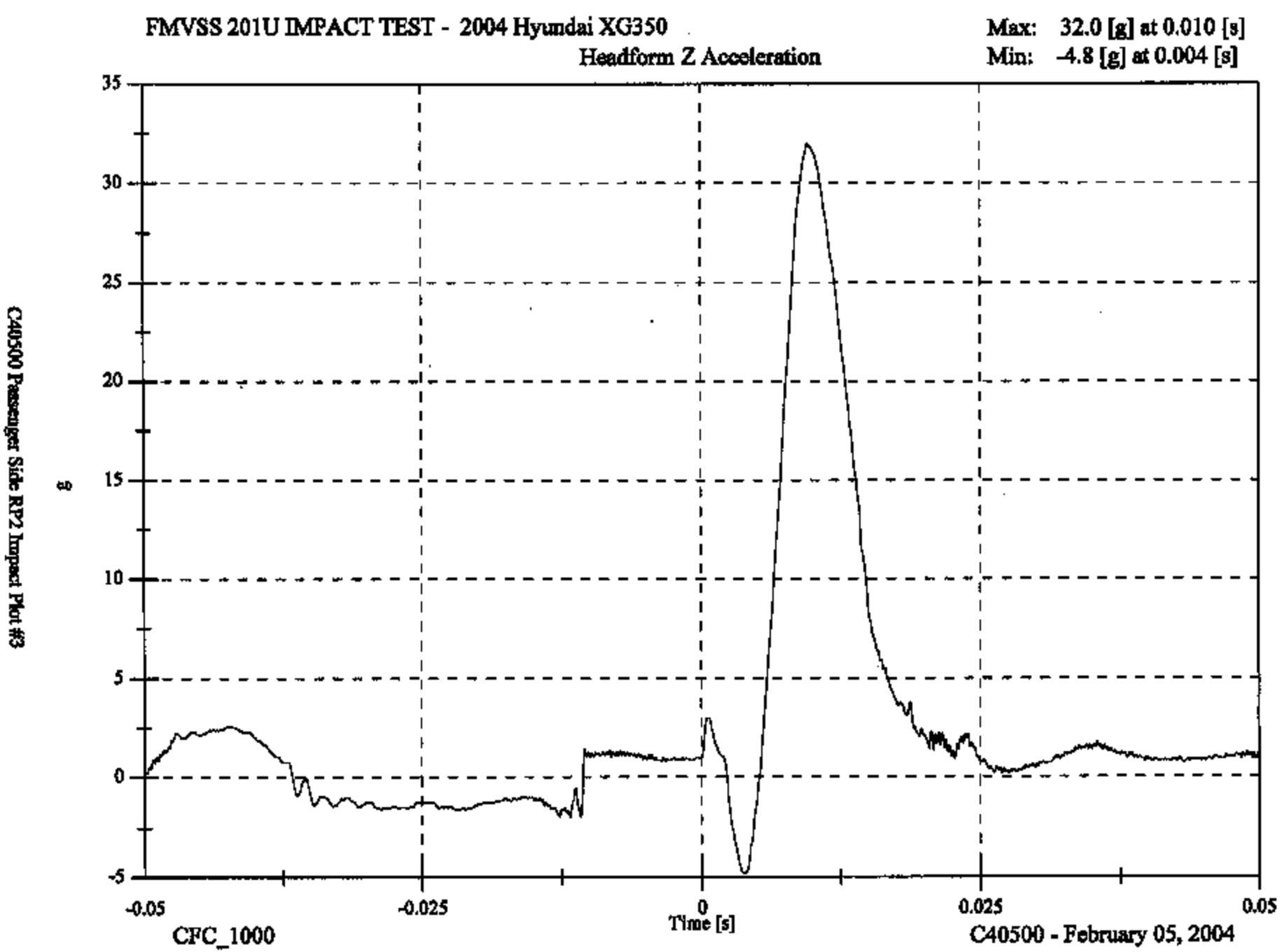
Max: 106.7 [g] at 0.008 [s]

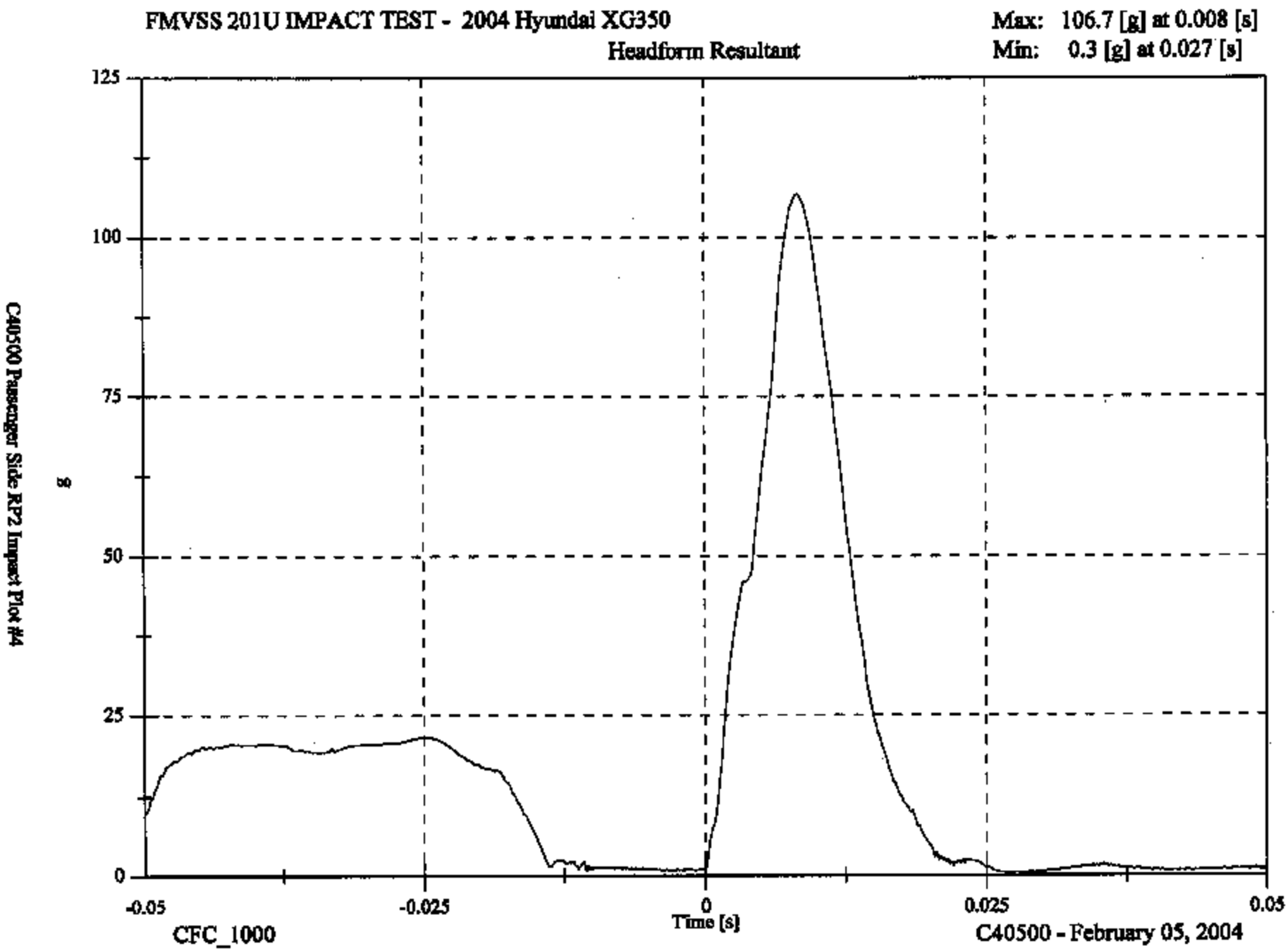
Min: 0.0 [g] at -0.068 [s]




FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 21.5 [g] at -0.024 [s]
Min: -103.6 [g] at 0.008 [s]
25
0
-25
-50
-75
-100
-125
g
C40500 Passenger Side RP2 Impact Plot #1
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Y Acceleration
Max: 1.5 [g] at 0.002 [s]
Min: -8.3 [g] at 0.006 [s]
C40500 Passenger Side RP2 Impact Plot #2
g
2
0
-2
-4
-6
-8
-10
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

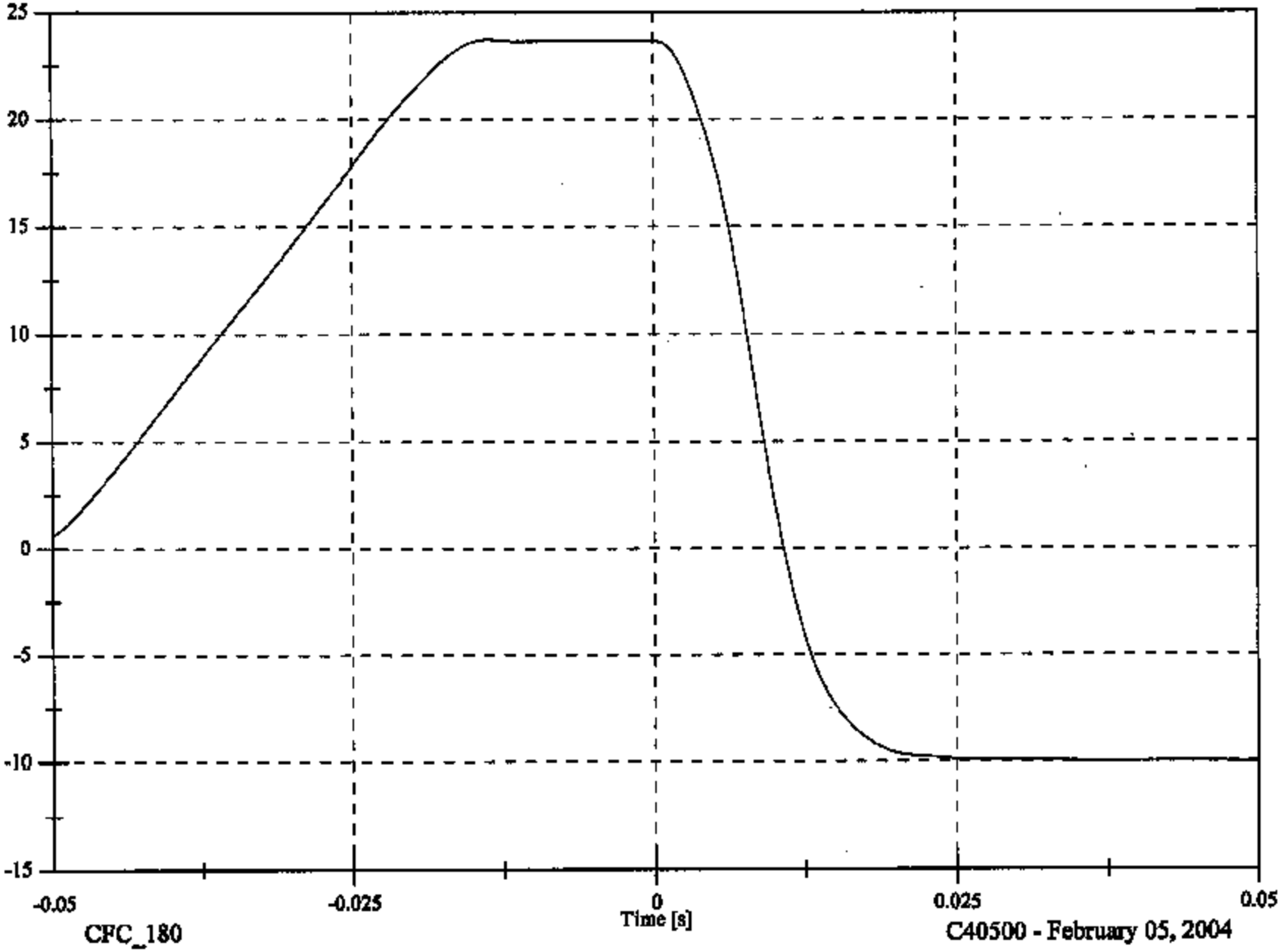

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Z Acceleration
Max: 32.0 [g] at 0.010 [s]
Min: -4.8 [g] at 0.004 [s]
C40500 Passenger Side RP2 Impact Plot #3
g
35
30
25
20
15
10
5
0
-5
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 106.7 [g] at 0.008 [s]
Min: 0.3 [g] at 0.027 [s]
125
100
75
50
25
0
g
C40500 Passenger Side RP2 Impact Plot #4
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

Max: 23.7 [KPH] at -0.014 [s]
Min: -10.0 [KPH] at 0.050 [s]

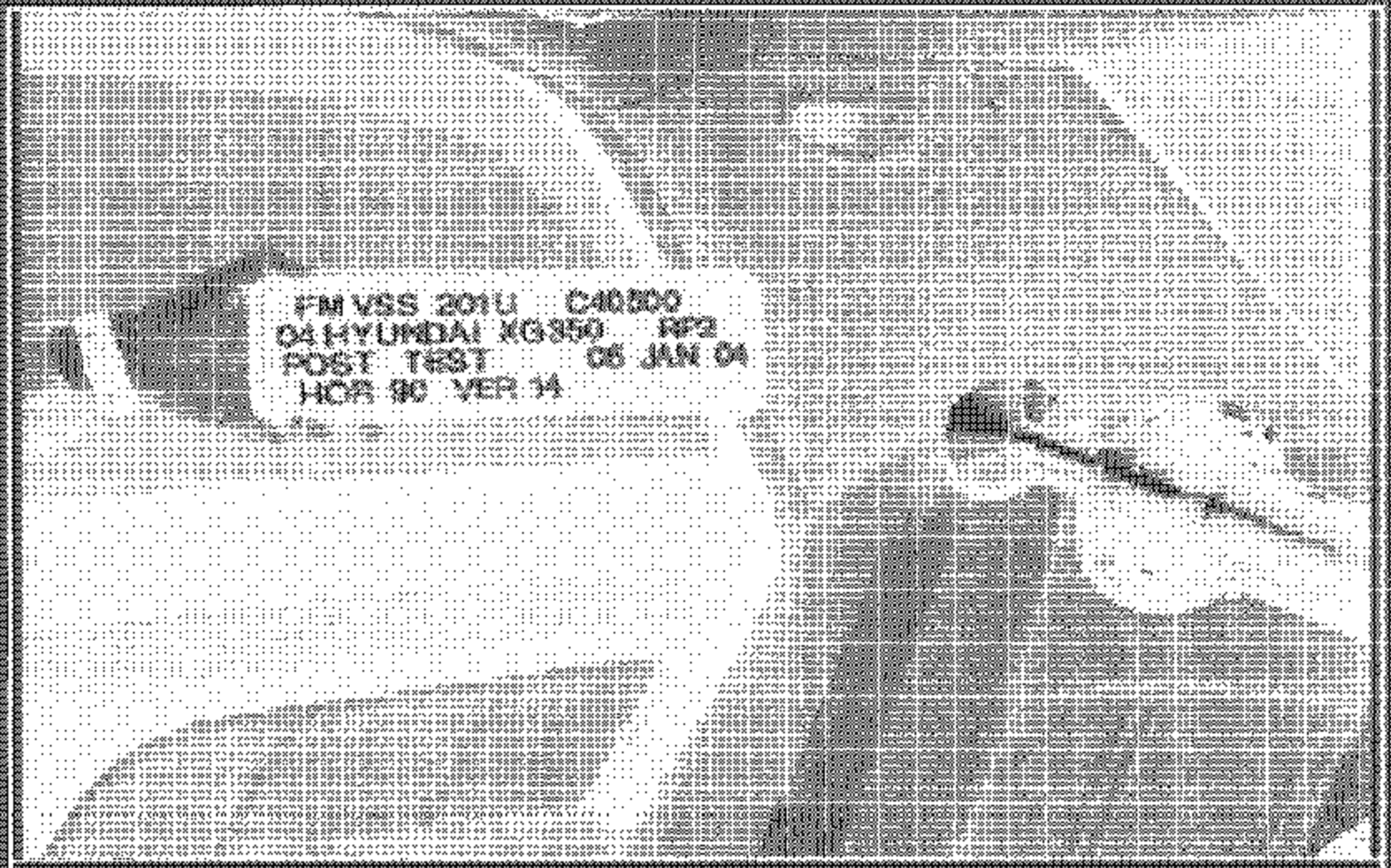


C40500 Passenger Side RP2 Impact Plot #5

CFC_180

C40500 - February 05, 2004

PRE-DRIVE NOTE: (Placard mislabeled 1st, should be 14th and 16 should be 1st)



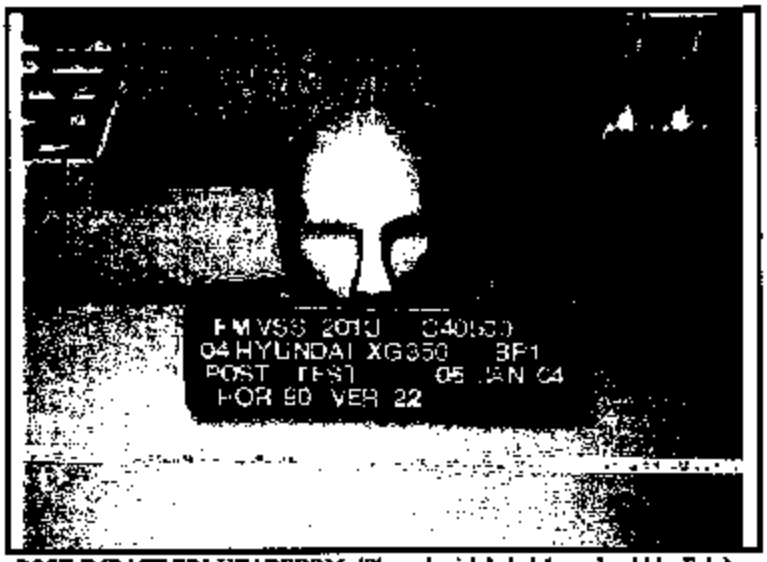
POST-IMPACT RF: (Passenger-side air bag should be Pink and 90 should be 1/2)

9730-06

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	04
Test Date:	February 5, 2004
Target Location:	B-Pillar
Target Code:	BP1
Horizontal Impact Angle:	90°
Vertical Impact Angle:	22°
Ambient Temperature:	20°C
Relative Humidity:	14
Time of Impact:	14:00
Headform Number:	0642

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	0	☐ mm right	☐ mm left
On Centerline	35	mm up	



POST-IMPACT BP1 HEADFORM (Placard mislabeled Jan., should be Feb.)

Free Motion HIC	812.0
HIC(d)	779.1
Impact Velocity (kph)	23.51
HIC T1 (msec)	2.2
HIC T2 (msec)	10.1

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - BP1

FMH Headform 0642

Test Date: February 05, 2004

Location: BP1

Work File: BP1

TEST RESULTS

Lab Temperature: 20 C

Lab Humidity: 14 %

Velocity at Impact: 23.51 KPH

Free Flight Distance: 218.07 mm

HICd: 779.1

HIC (36ms): 812.0

t1: 2.2 msec

t2: 10.1 msec

Duration: 7.8 msec

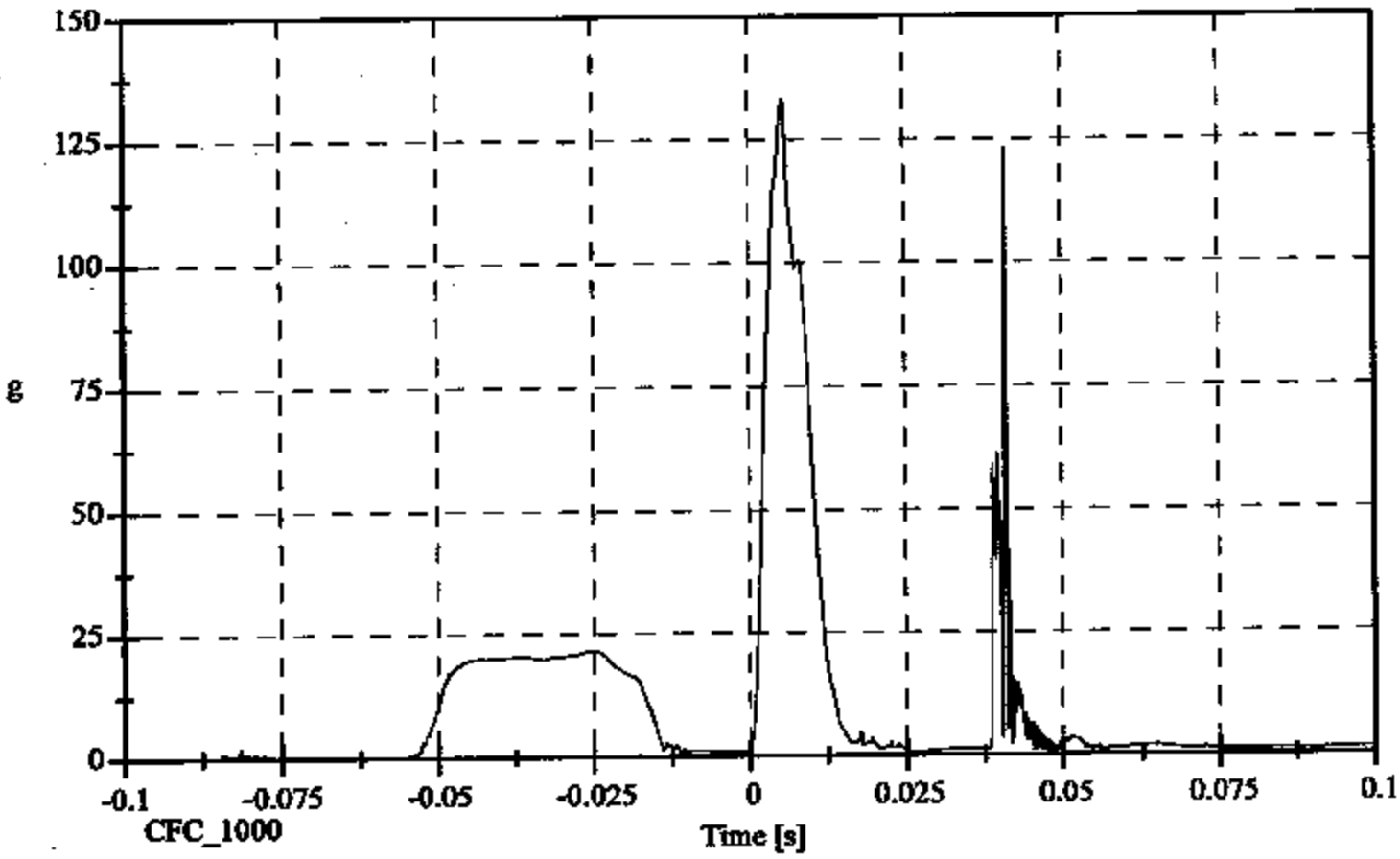
Average Acceleration: 9.8 g

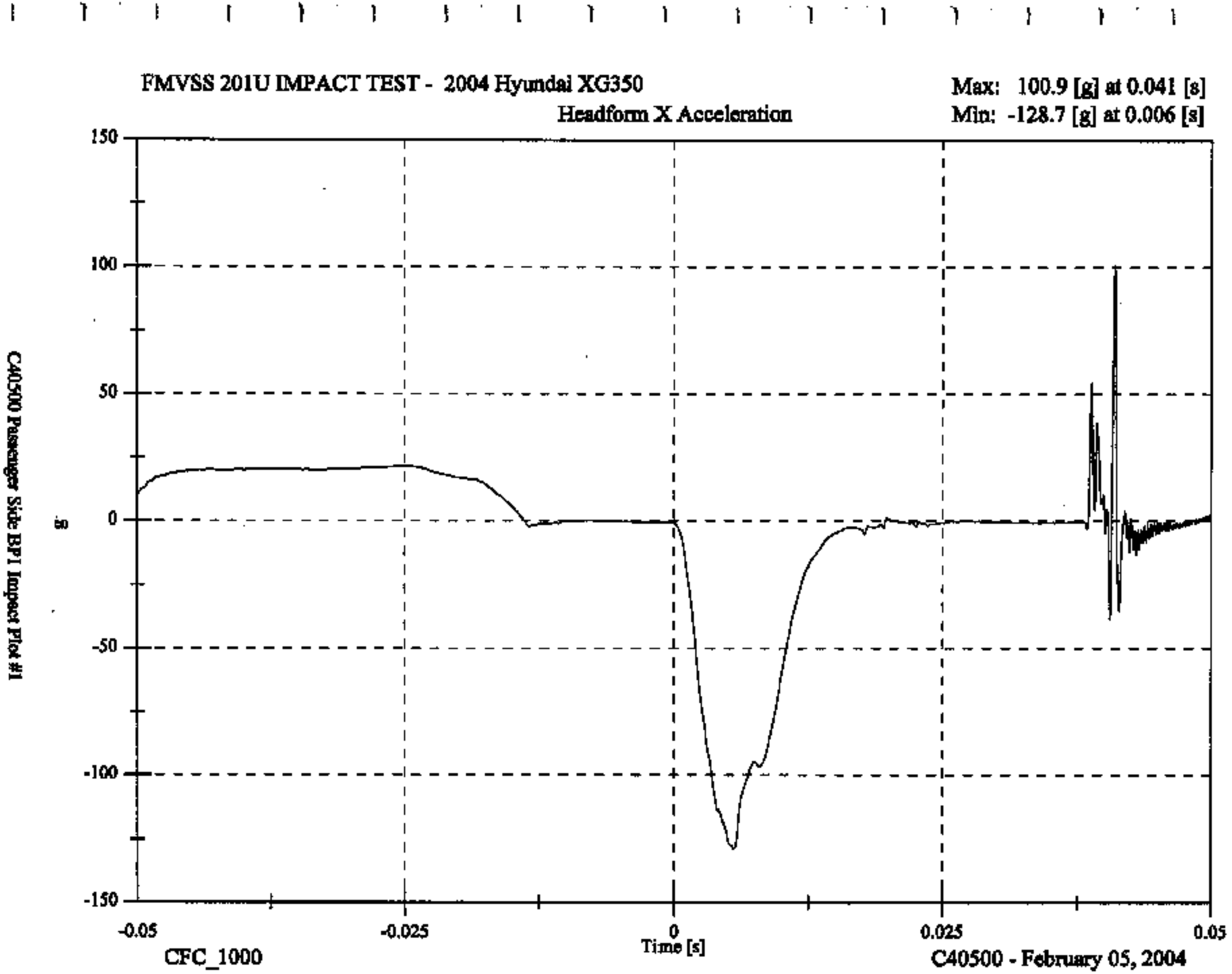
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

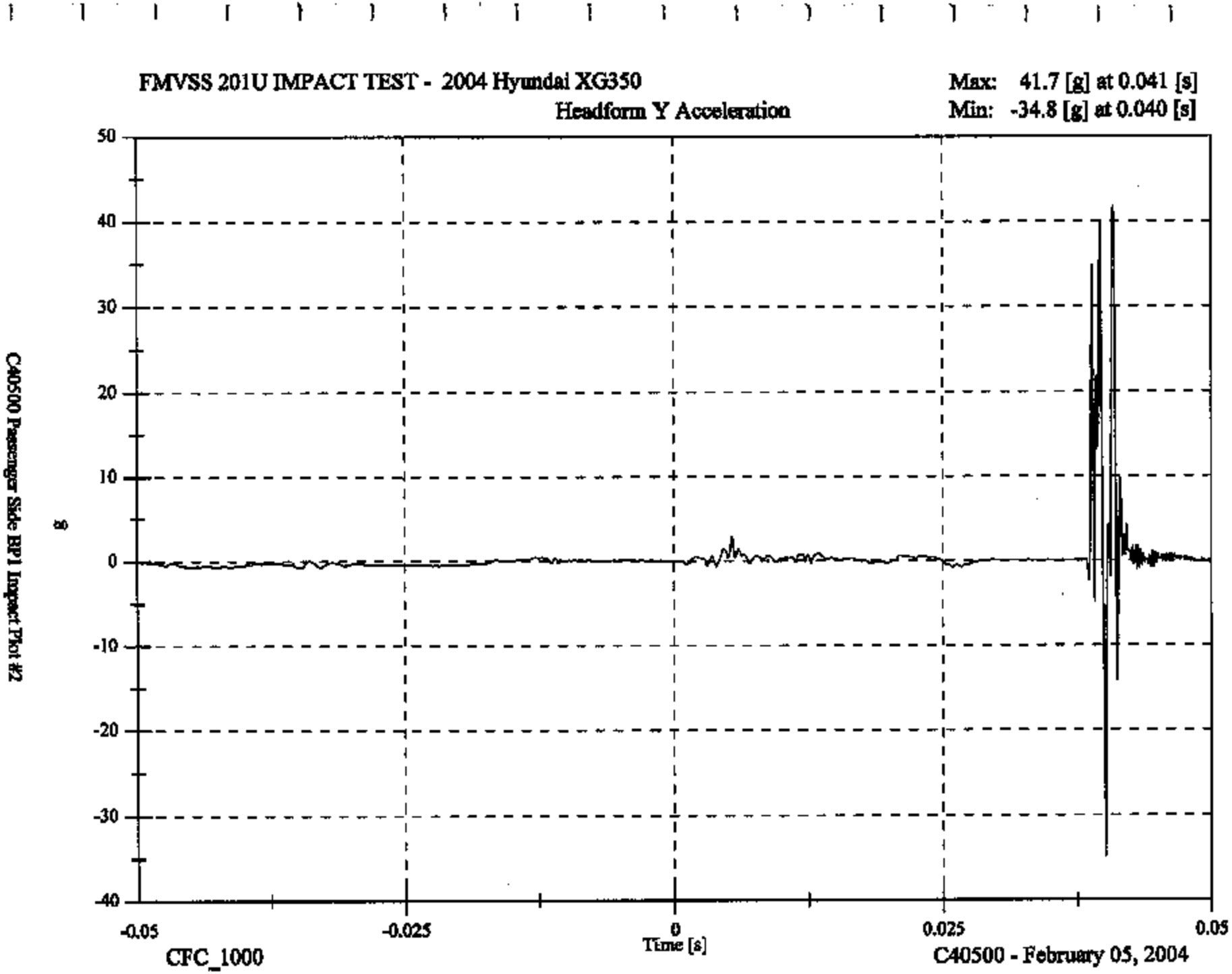
Headform Resultant

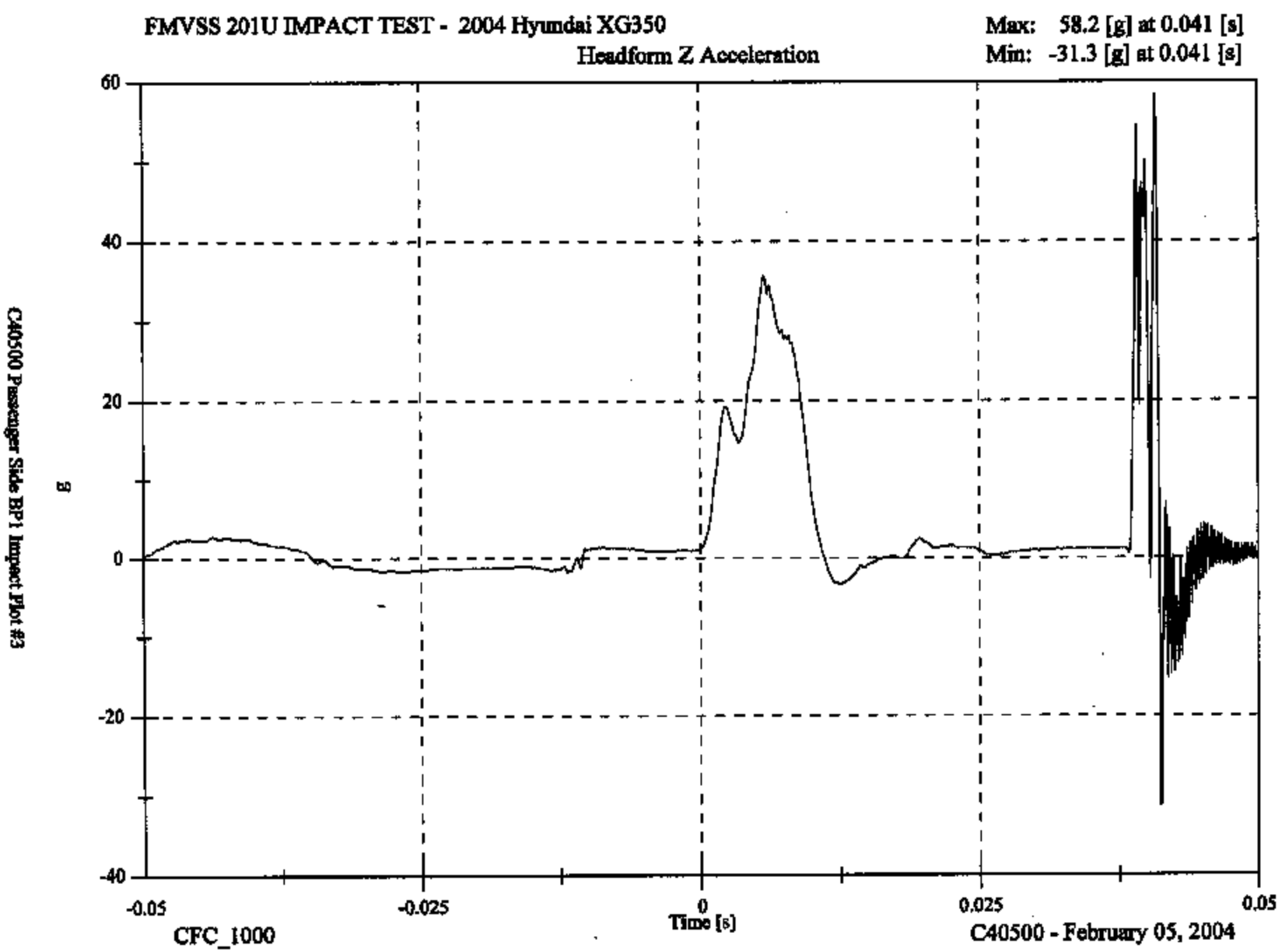
Max: 133.3 [g] at 0.006 [s]

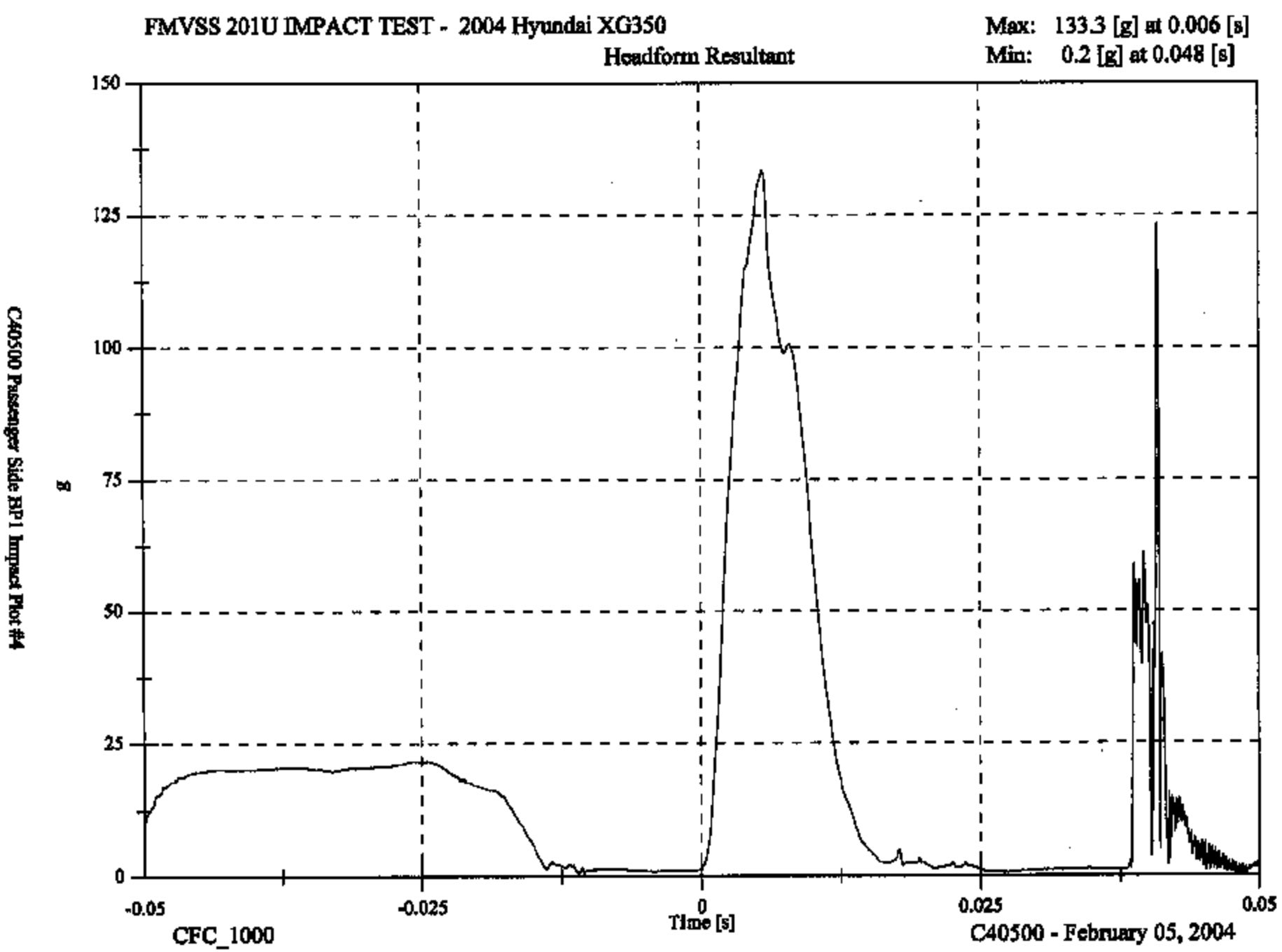
Min: 0.0 [g] at -0.094 [s]




FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 100.9 [g] at 0.041 [s]
Min: -128.7 [g] at 0.006 [s]
C40500 Passenger Side BFI Impact Plot #1
g
150
100
50
0
-50
-100
-150
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Y Acceleration
Max: 41.7 [g] at 0.041 [s]
Min: -34.8 [g] at 0.040 [s]
C40500 Passenger Side HP1 Impact Plot #2
g
50
40
30
20
10
0
-10
-20
-30
-40
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

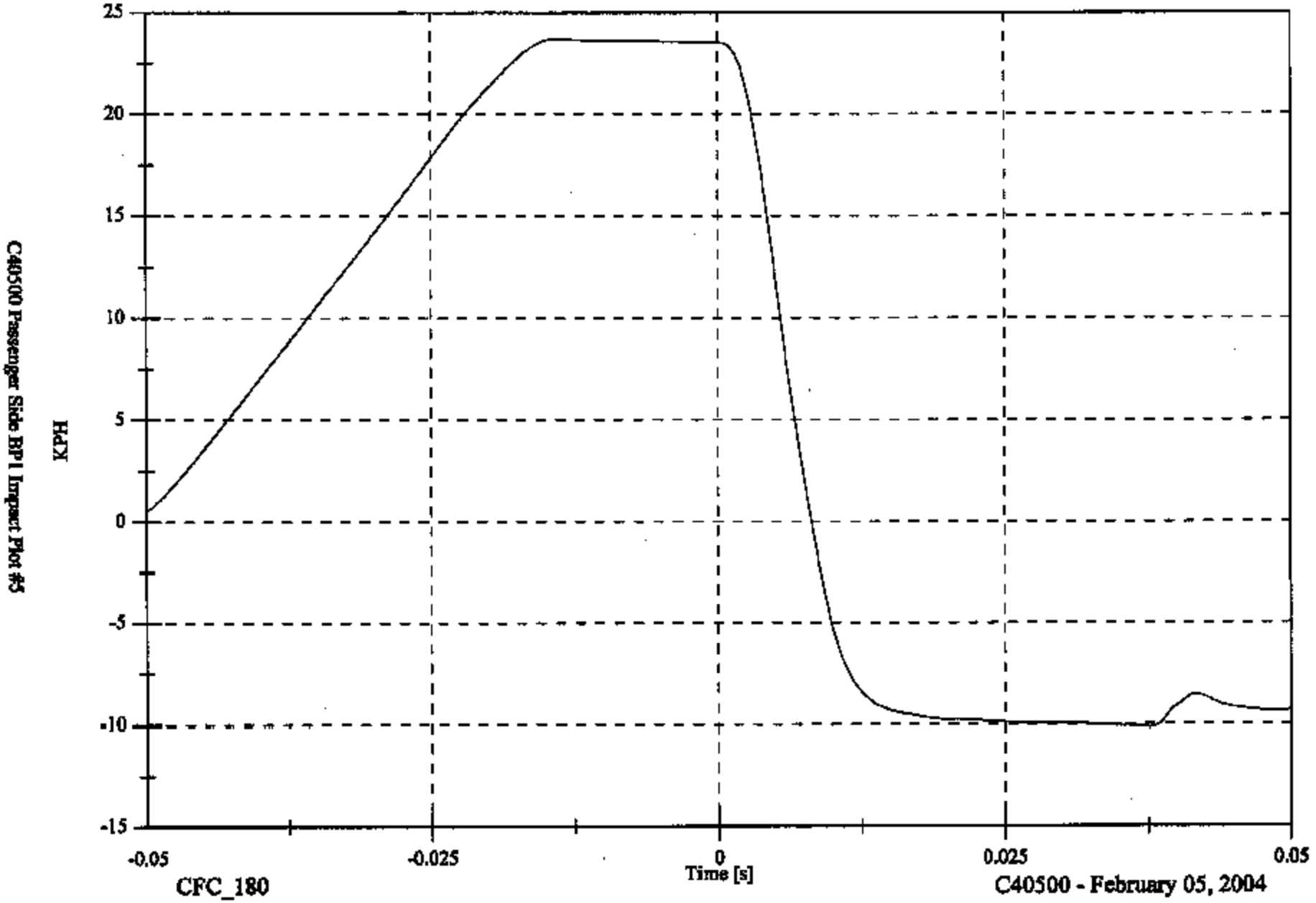

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Z Acceleration
Max: 58.2 [g] at 0.041 [s]
Min: -31.3 [g] at 0.041 [s]
60
40
20
0
-20
-40
g
C40500 Passenger Side BP1 Impact Plot #3
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 133.3 [g] at 0.006 [s]
Min: 0.2 [g] at 0.048 [s]
C40500 Passenger Side HP1 Impact Plot #4
g
150
125
100
75
50
25
0
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

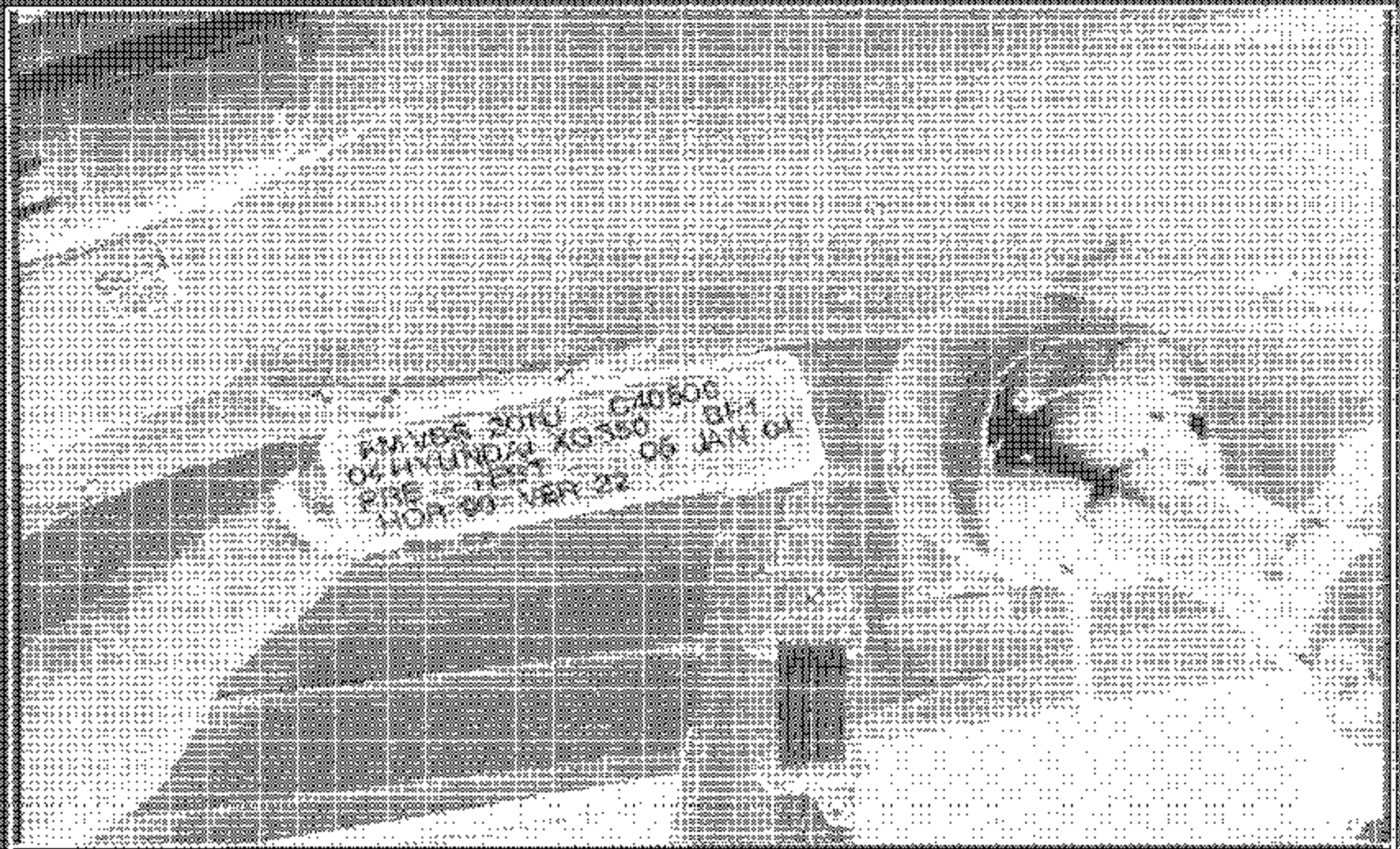
Max: 23.7 [KPH] at -0.014 [s]
Min: -10.1 [KPH] at 0.038 [s]



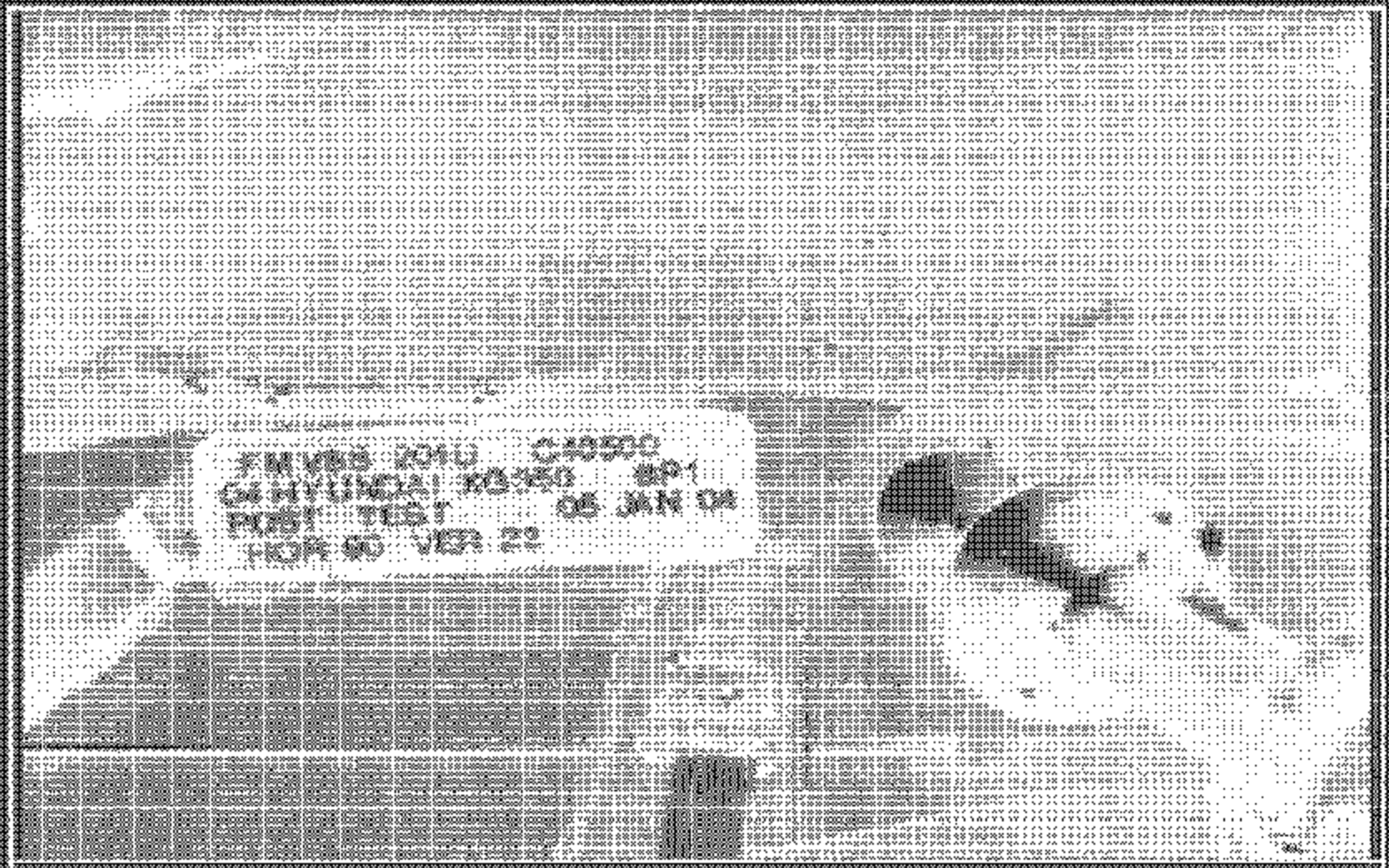
C40500 Passenger Side BP1 Impact Plot #5

CFC_180

C40500 - February 05, 2004



PRE IMPACT RFI (Pencil Undistorted Dot, Avoid 'X' Fdc.)



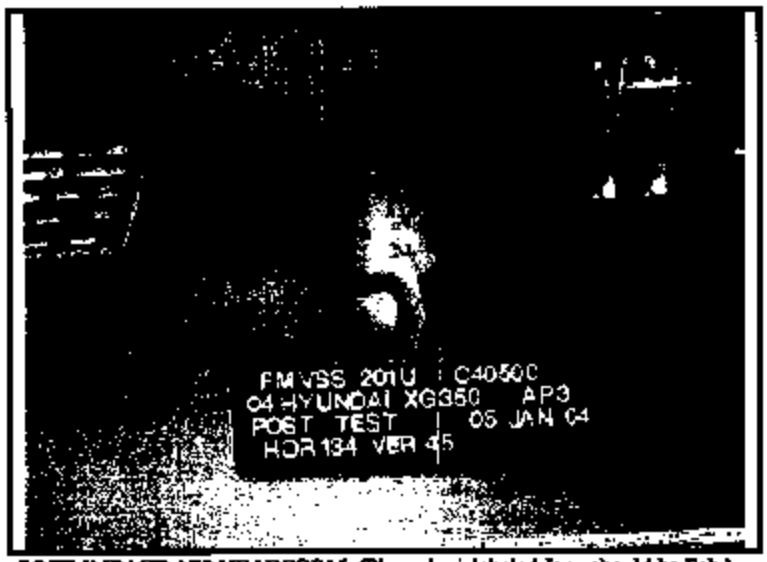
POST-IMPACT API (Placed engine/battery, should be Park)

8730-06

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	05
Test Date:	February 5, 2004
Target Location:	A-Pillar
Target Code:	AP3
Horizontal Impact Angle:	134°
Vertical Impact Angle:	45°
Ambient Temperature:	20°C
Relative Humidity:	14
Time of Impact:	14:30
Headform Number:	0062

Impact Point Description (from lower midpoint on midsagittal line)				
On Centerline	0	☐	mm right ☐	mm left
On Centerline	15		mm up	



POST-IMPACT AP3 HEADFORM (Placard mislabeled Jan., should be Feb.)

Free Motion HIC	512.6
HIC(d)	553.1
Impact Velocity (kph)	23.35
HIC T1 (msec)	1.2
HIC T2 (msec)	11.7

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - AP3

FMH Headform 0062

Test Date: February 05, 2004

Location: AP3

Work File: AP3

TEST RESULTS

Lab Temperature: 20 C

Lab Humidity: 14 %

Velocity at Impact: 23.35 KPH

Free Flight Distance: 221.32 mm

HICd: 553.1

HIC (36ms): 512.6

t1: 1.2 msec

t2: 11.7 msec

Duration: 10.4 msec

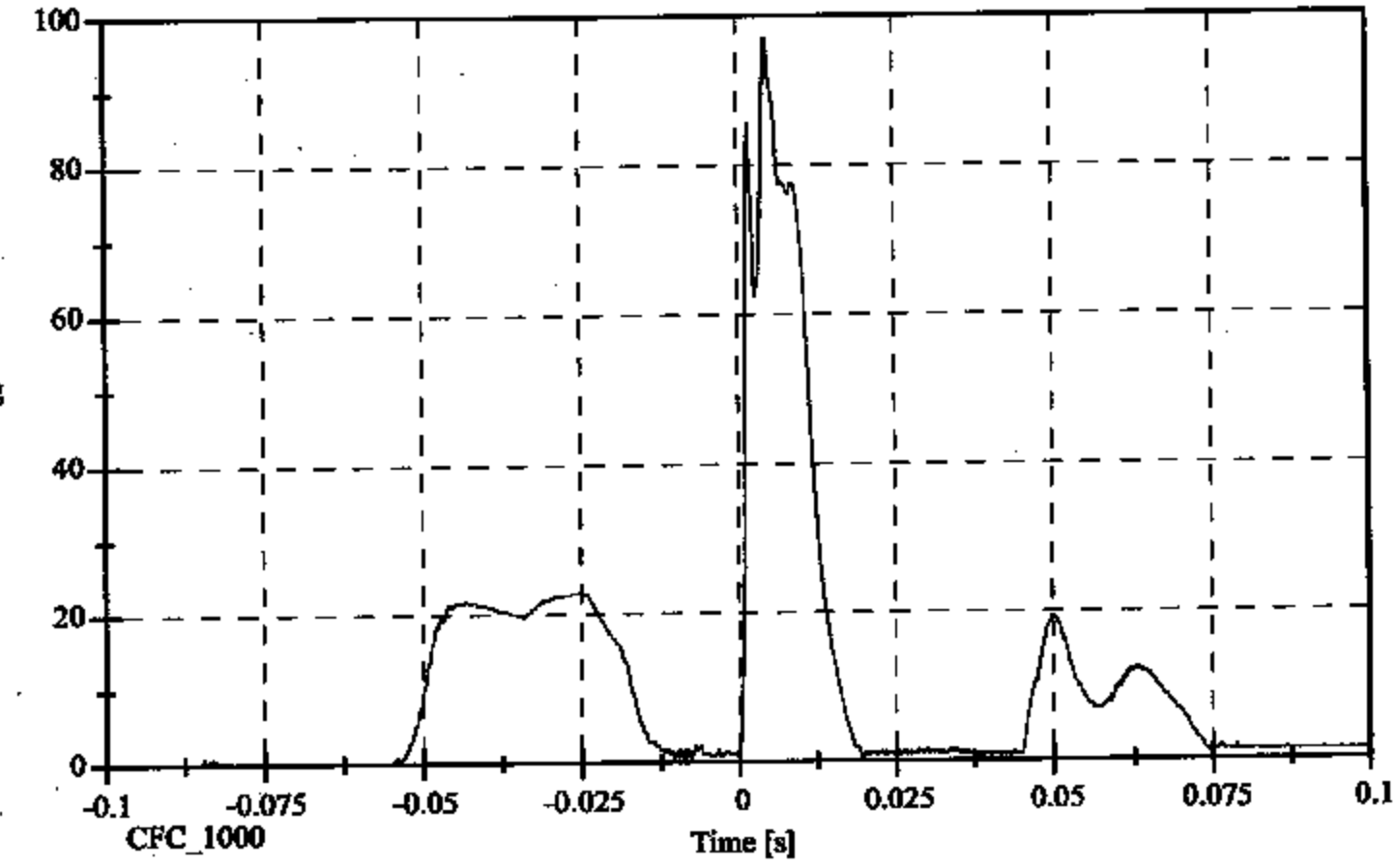
Average Acceleration: 9.9 g

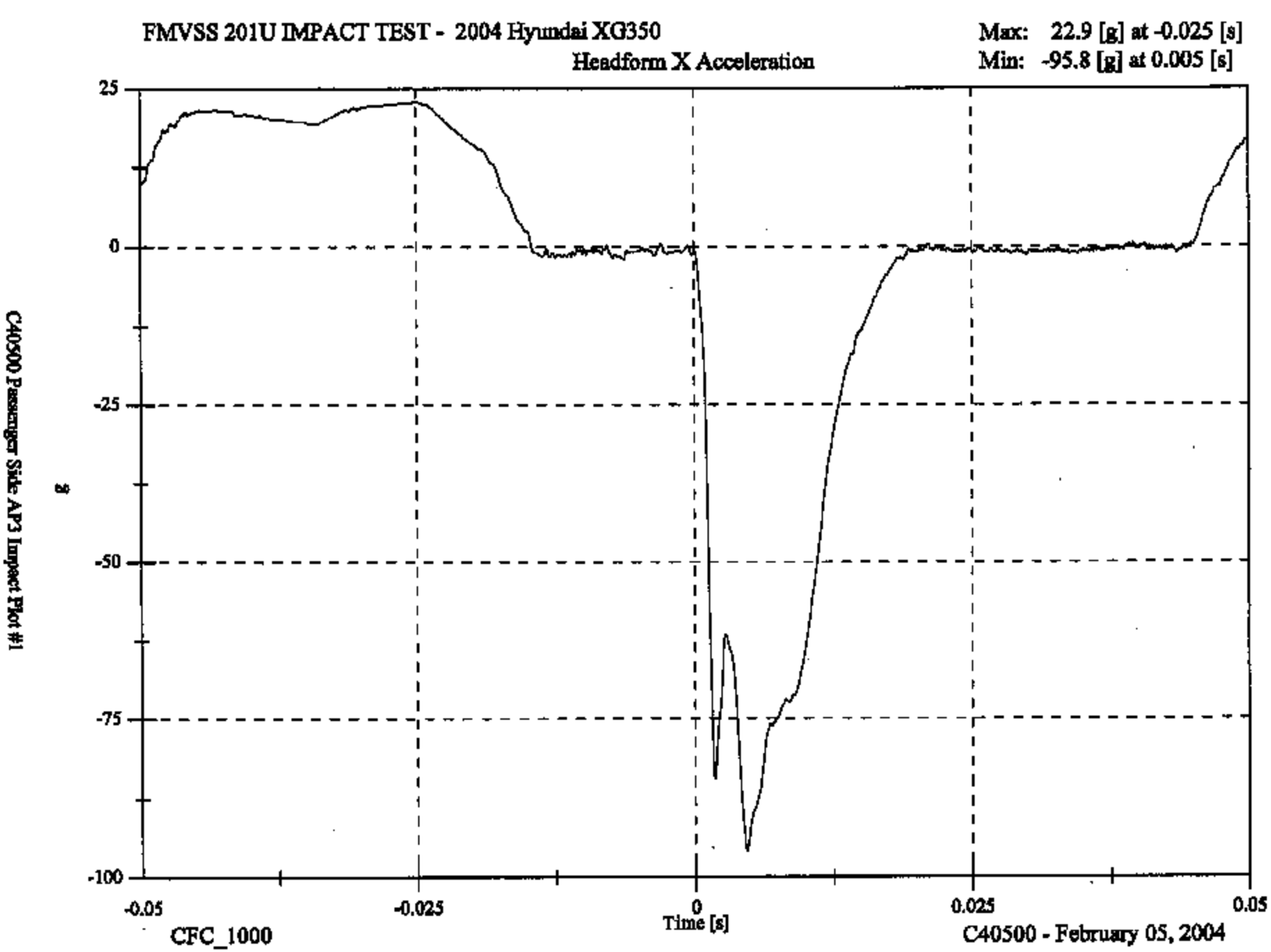
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

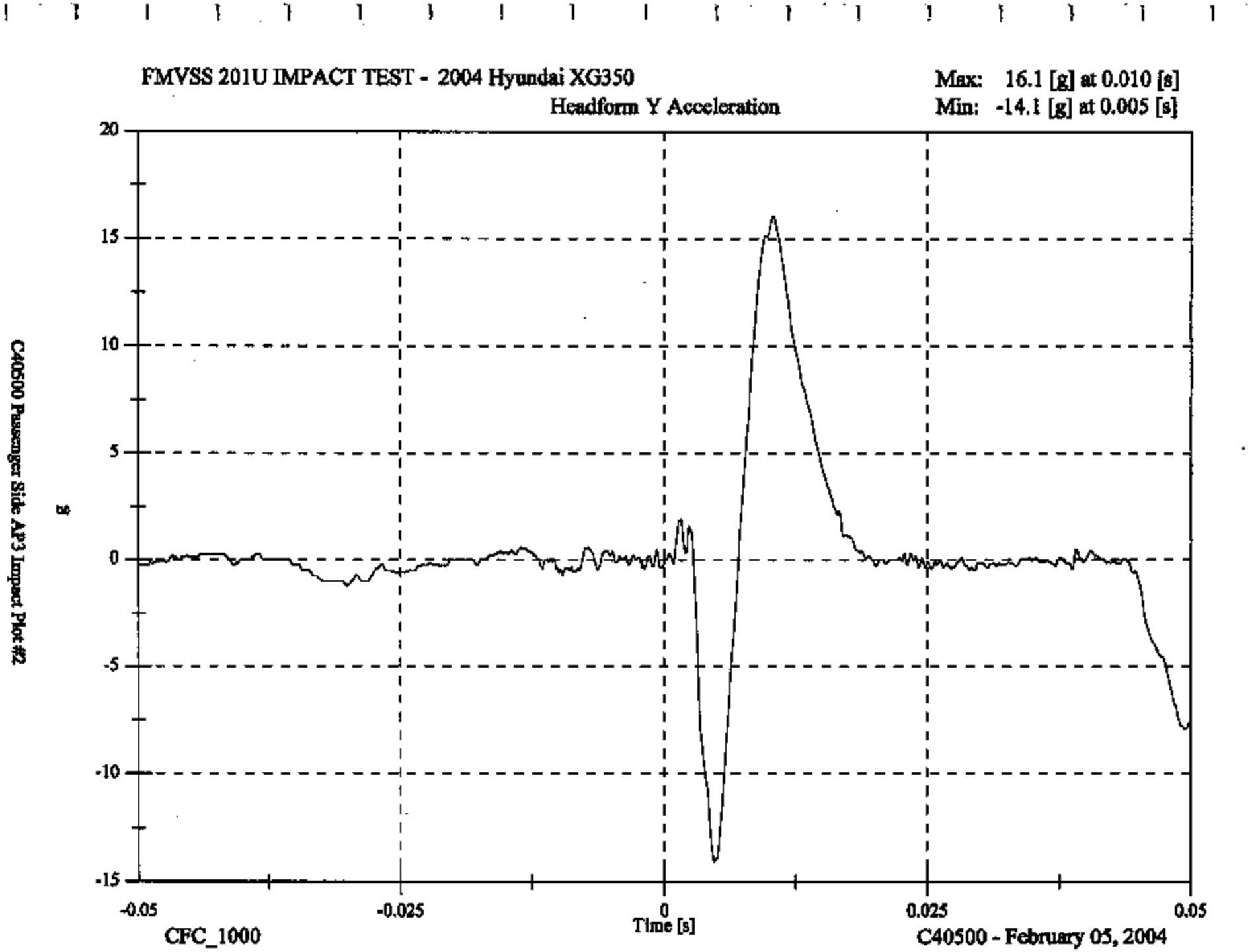
Headform Resultant

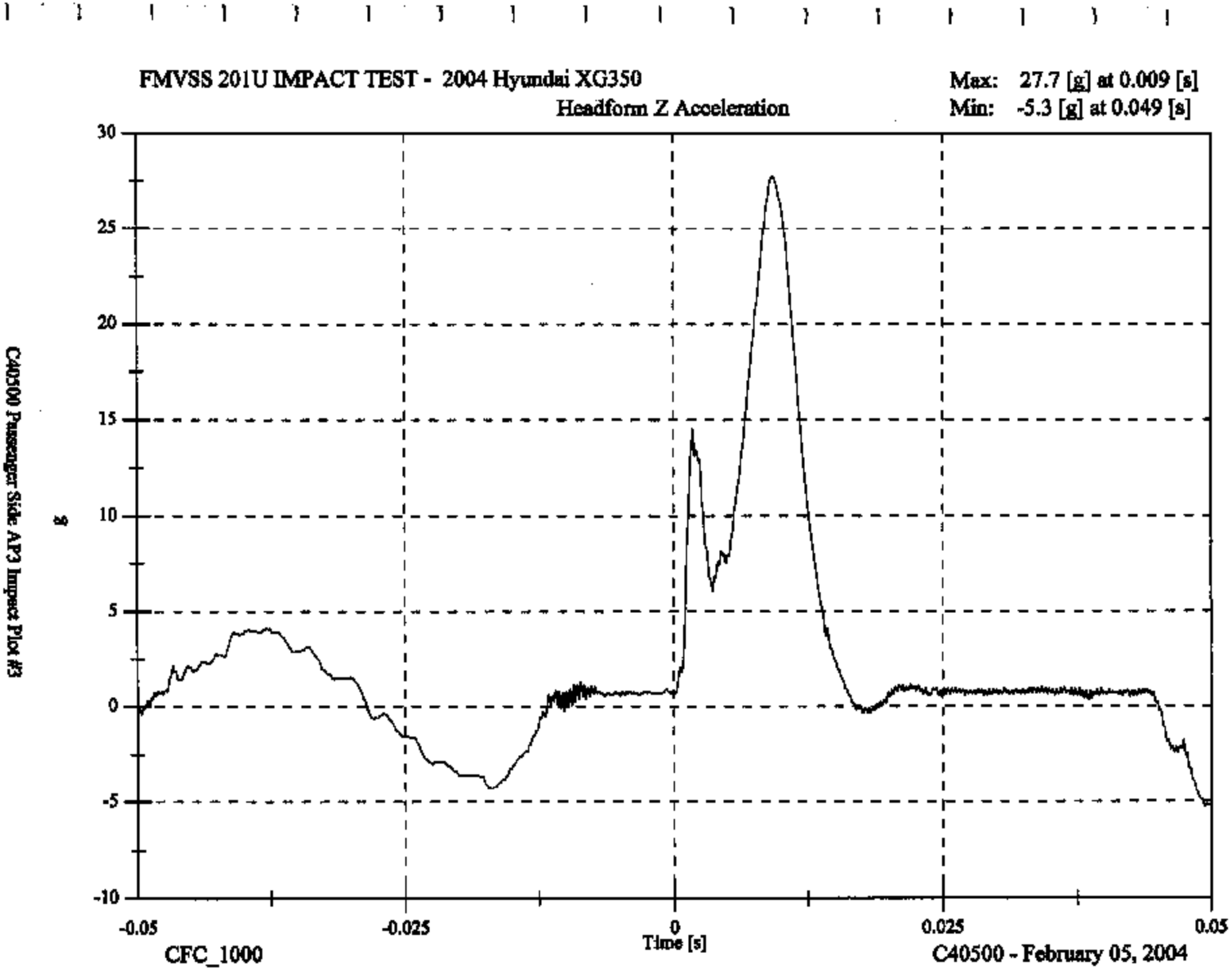
Max: 97.1 [g] at 0.005 [s]

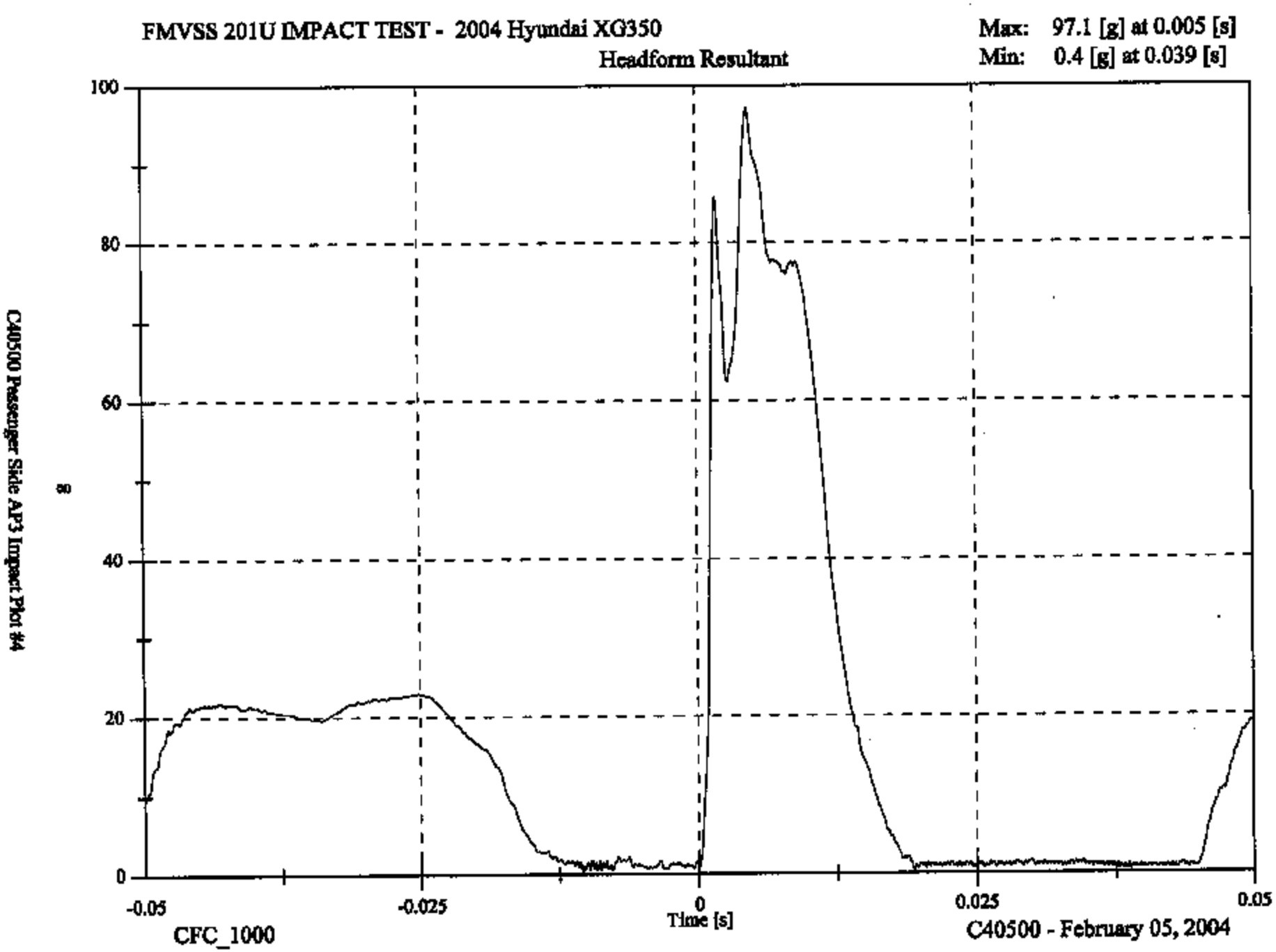
Min: 0.0 [g] at -0.066 [s]




FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 22.9 [g] at -0.025 [s]
Min: -95.8 [g] at 0.005 [s]
25
0
-25
-50
-75
-100
g
C40500 Passenger Side AP3 Impact Plot #1
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Y Acceleration
Max: 16.1 [g] at 0.010 [s]
Min: -14.1 [g] at 0.005 [s]
C40500 Passenger Side AP3 Impact Plot #2
g
20
15
10
5
0
-5
-10
-15
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Z Acceleration
Max: 27.7 [g] at 0.009 [s]
Min: -5.3 [g] at 0.049 [s]
C40500 Passenger Side AP3 Impact Plot #3
g
30
25
20
15
10
5
0
-5
-10
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

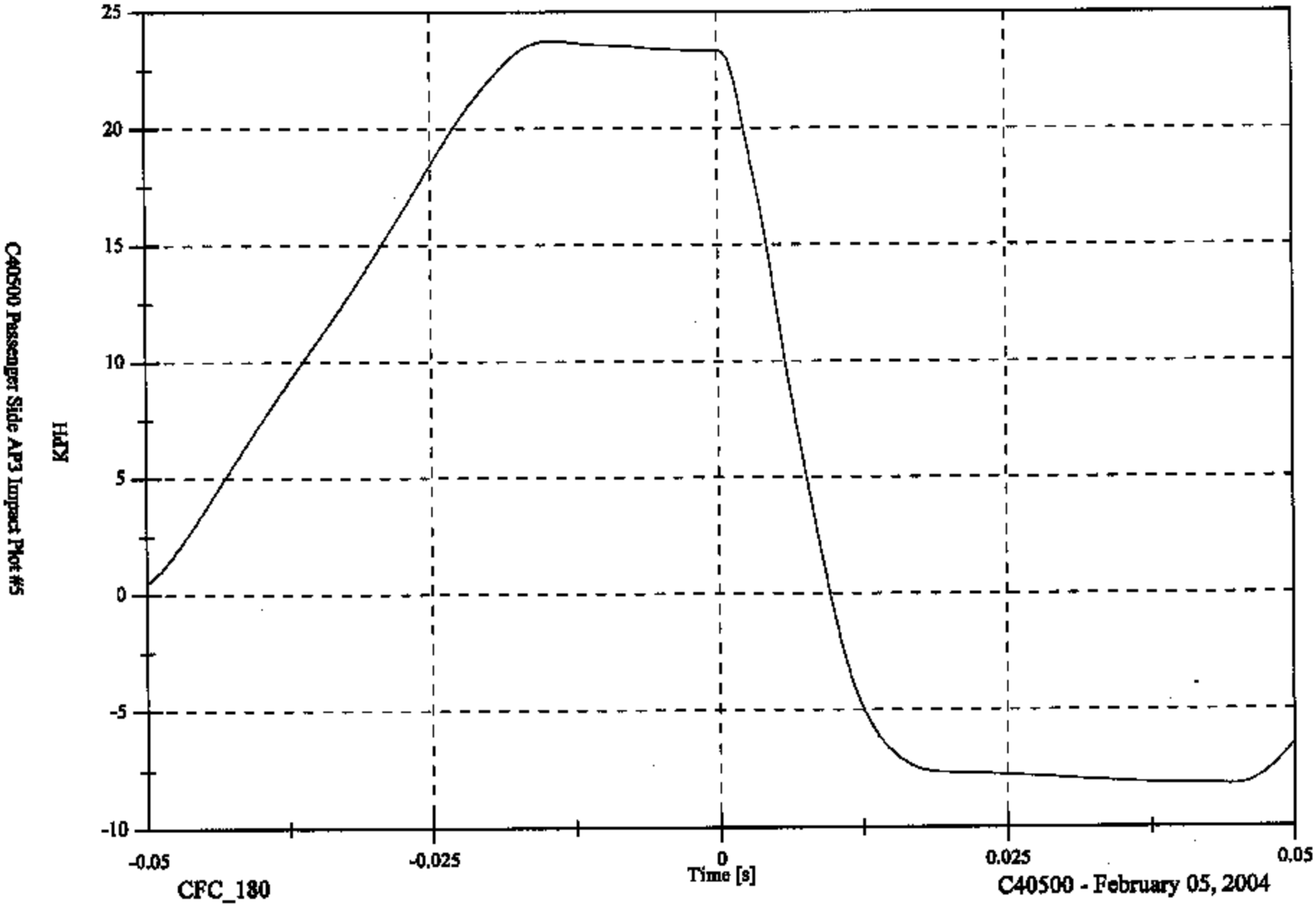

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 97.1 [g] at 0.005 [s]
Min: 0.4 [g] at 0.039 [s]
C40500 Passenger Side AP3 Impact Plot #4
g
100
80
60
40
20
0
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

Max: 23.8 [KPH] at -0.014 [s]

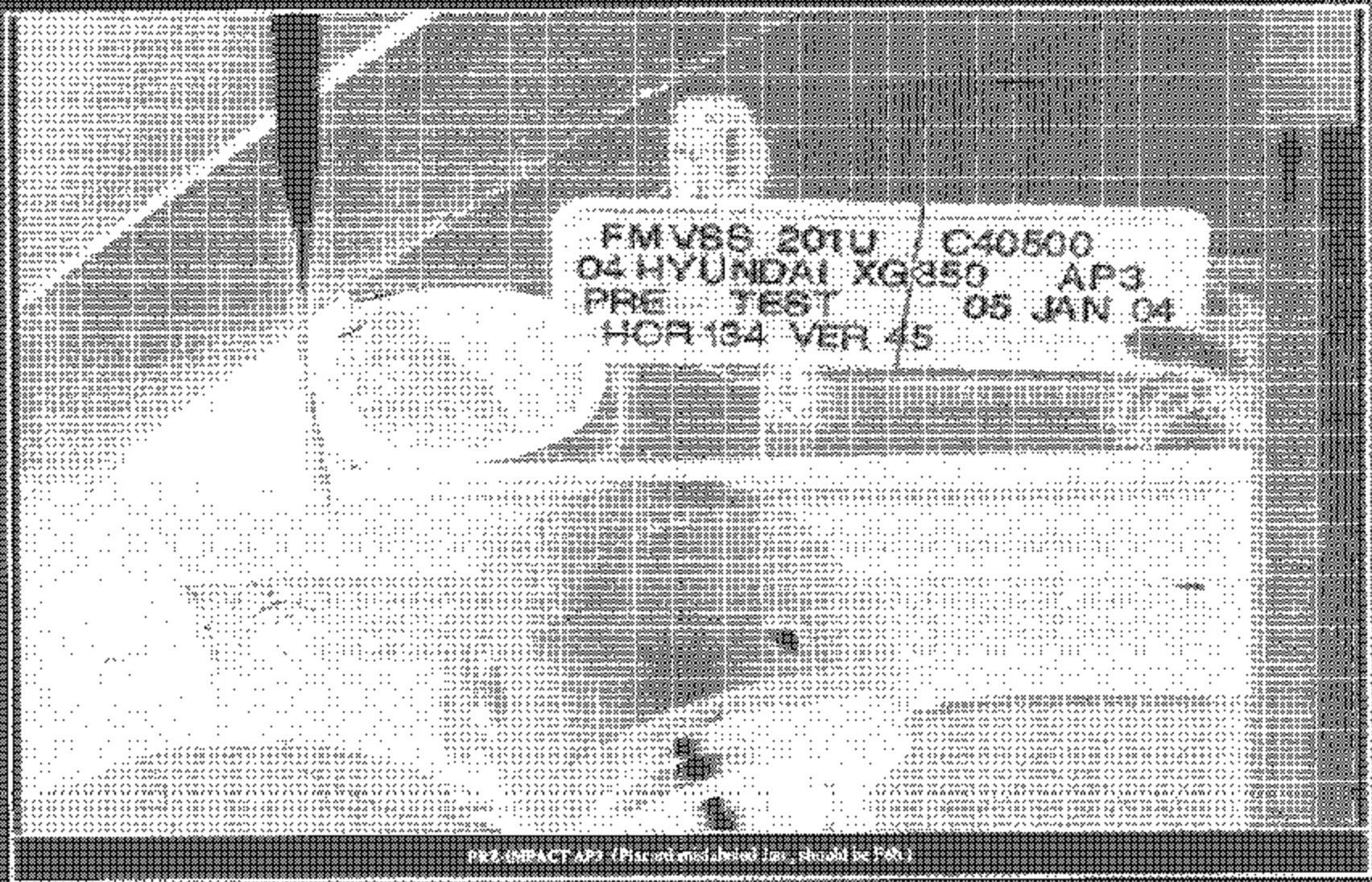
Min: -8.1 [KPH] at 0.045 [s]



C40500 Passenger Side AP3 Impact Plot #5

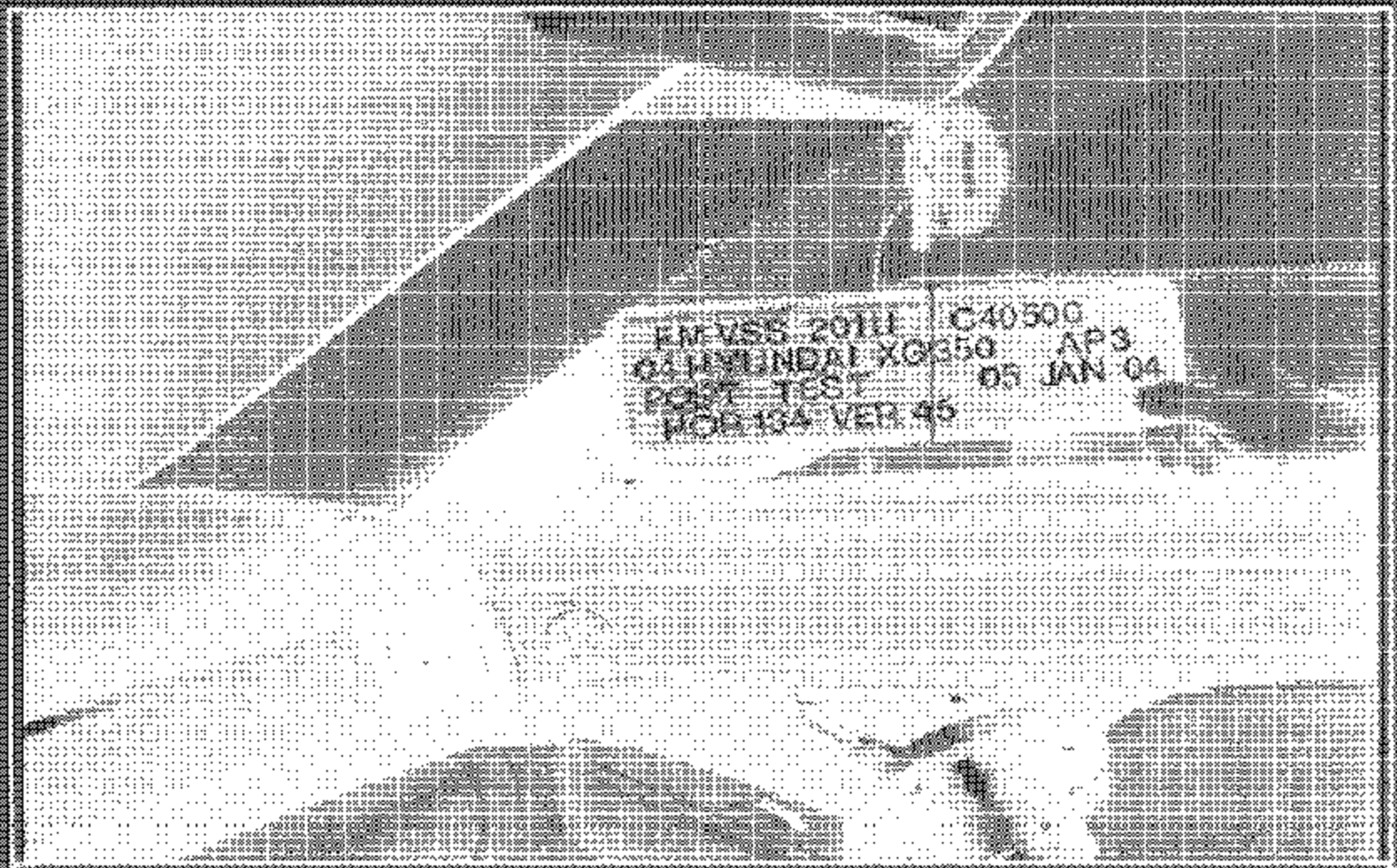
CFC_180

C40500 - February 05, 2004



P82 (IMPACT AP3 (Placard misleading, should be P82.)

8730-06



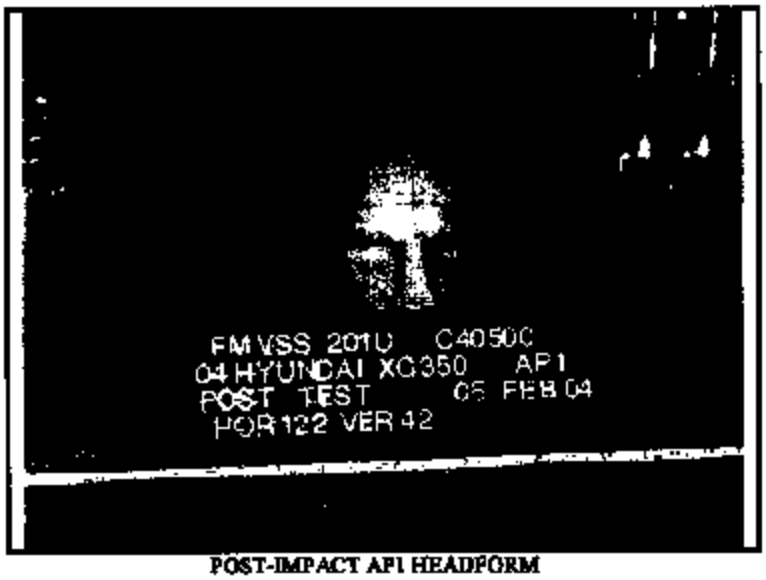
POST-IMPACT NO. (Please continued on next sheet)

8730-06

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEB CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	06
Test Date:	February 5, 2004
Target Location:	A-Pillar
Target Code:	AP1
Horizontal Impact Angle:	122°
Vertical Impact Angle:	42°
Ambient Temperature:	20°C
Relative Humidity:	14
Time of Impact:	15:15
Headform Number:	0805

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	10	x	mm right		mm left
On Centerline	11		mm up		



POST-IMPACT AP1 HEADFORM

Free Motion HIC	953.5
HIC(d)	885.8
Impact Velocity (kph)	23.74
HIC T1 (msec)	3.5
HIC T2 (msec)	8.8

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - AP1

FMH Headform 0805

Test Date: February 05, 2004

Location: AP1

Work File: AP1

TEST RESULTS

Lab Temperature: 20 C

Lab Humidity: 14 %

Velocity at Impact: 23.74 KPH

Free Flight Distance: 218.21 mm

HICd: 885.8

HIC (36ms): 953.5

t1: 3.5 msec

t2: 8.7 msec

Duration: 5.2 msec

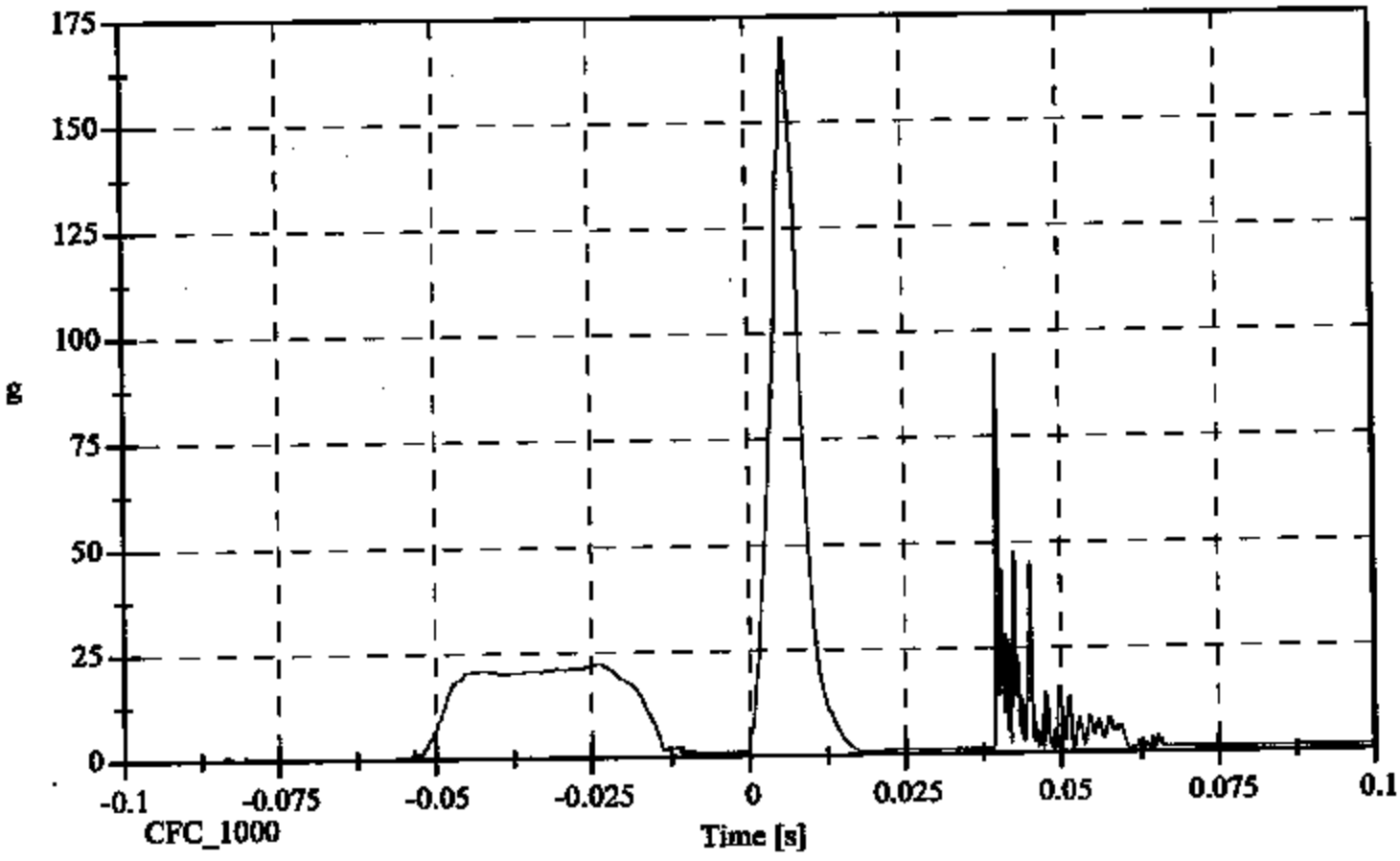
Average Acceleration: 9.8 g

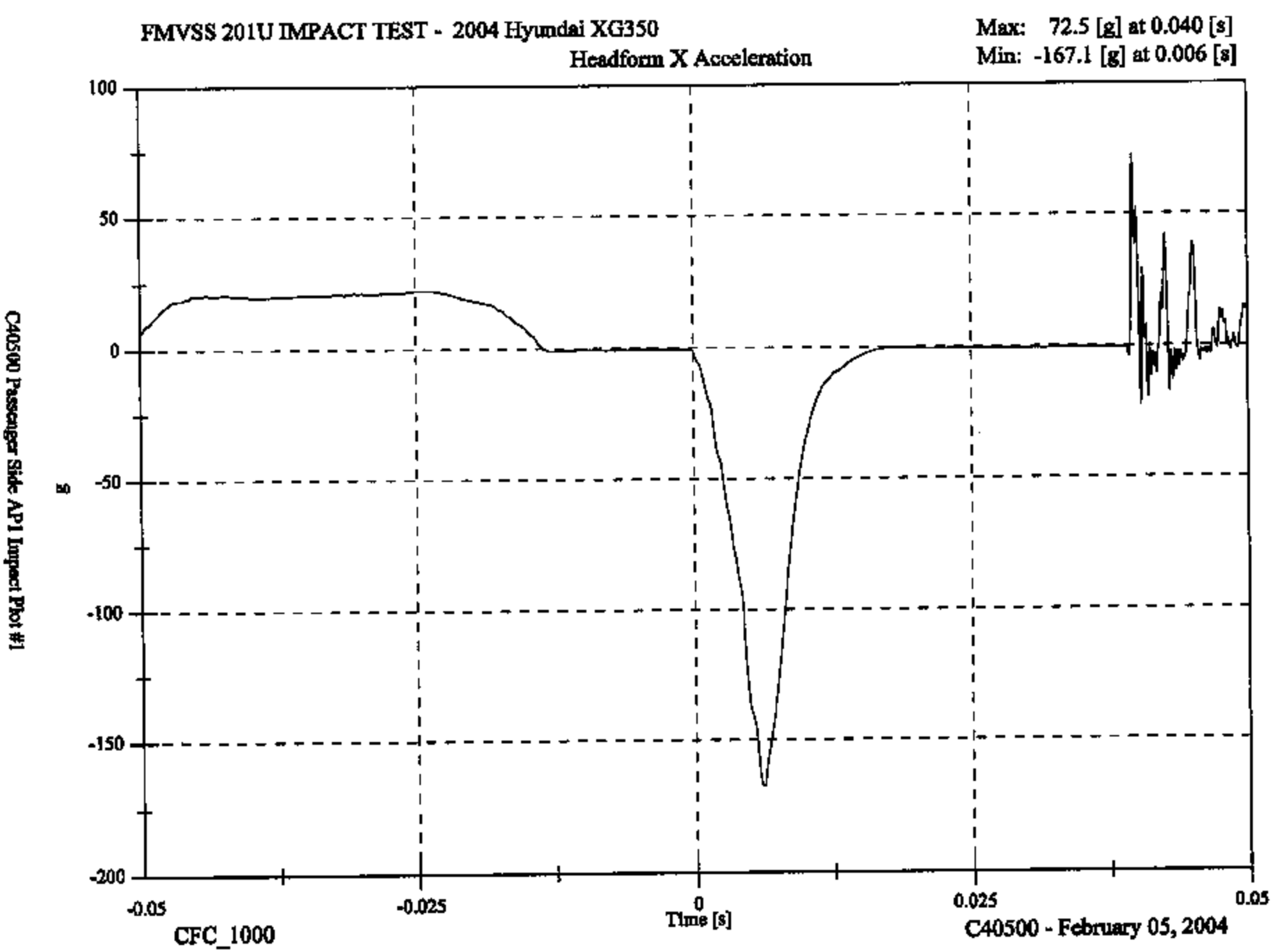
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

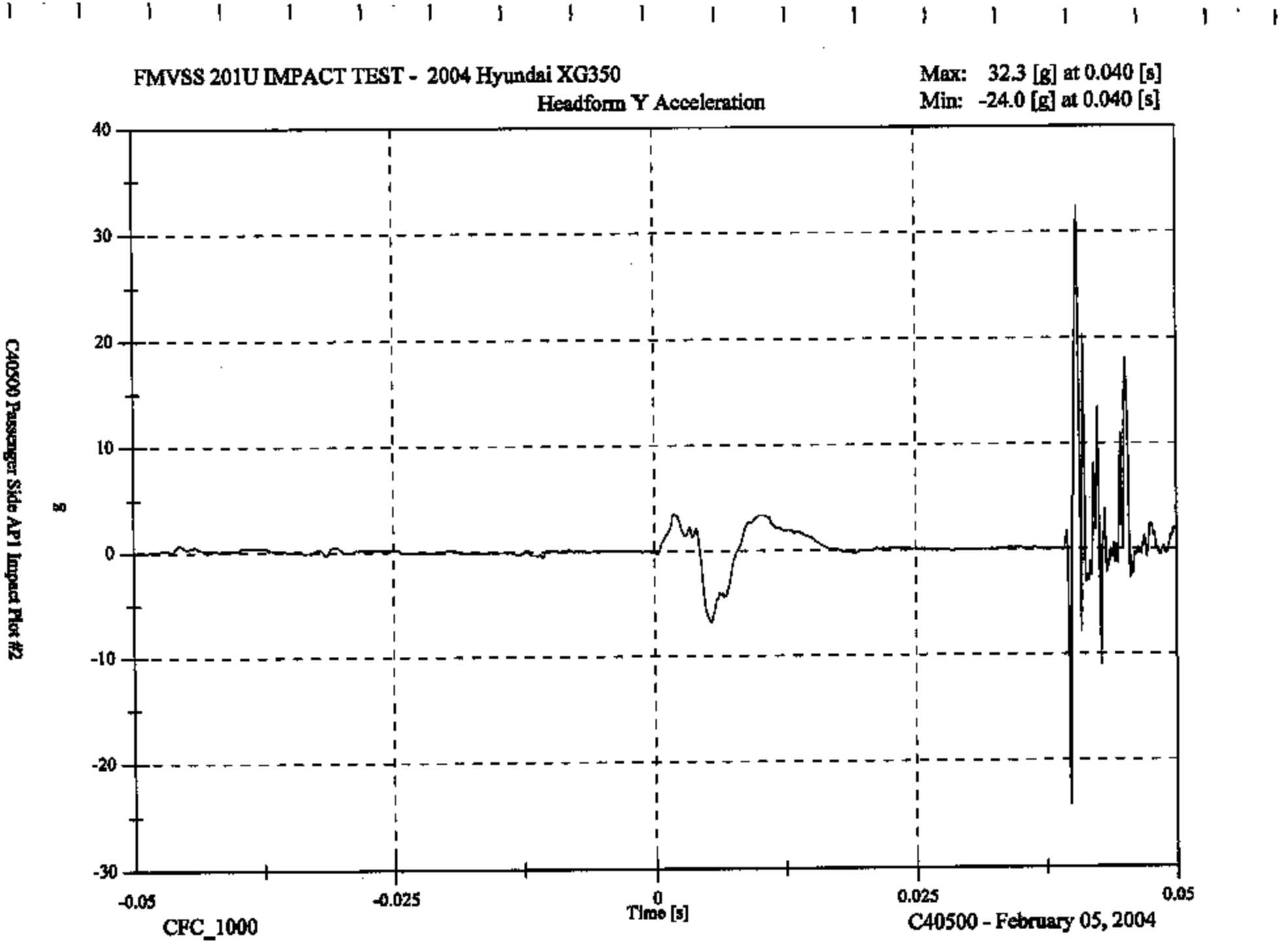
Headform Resultant

Max: 170.0 [g] at 0.006 [s]

Min: 0.0 [g] at -0.066 [s]



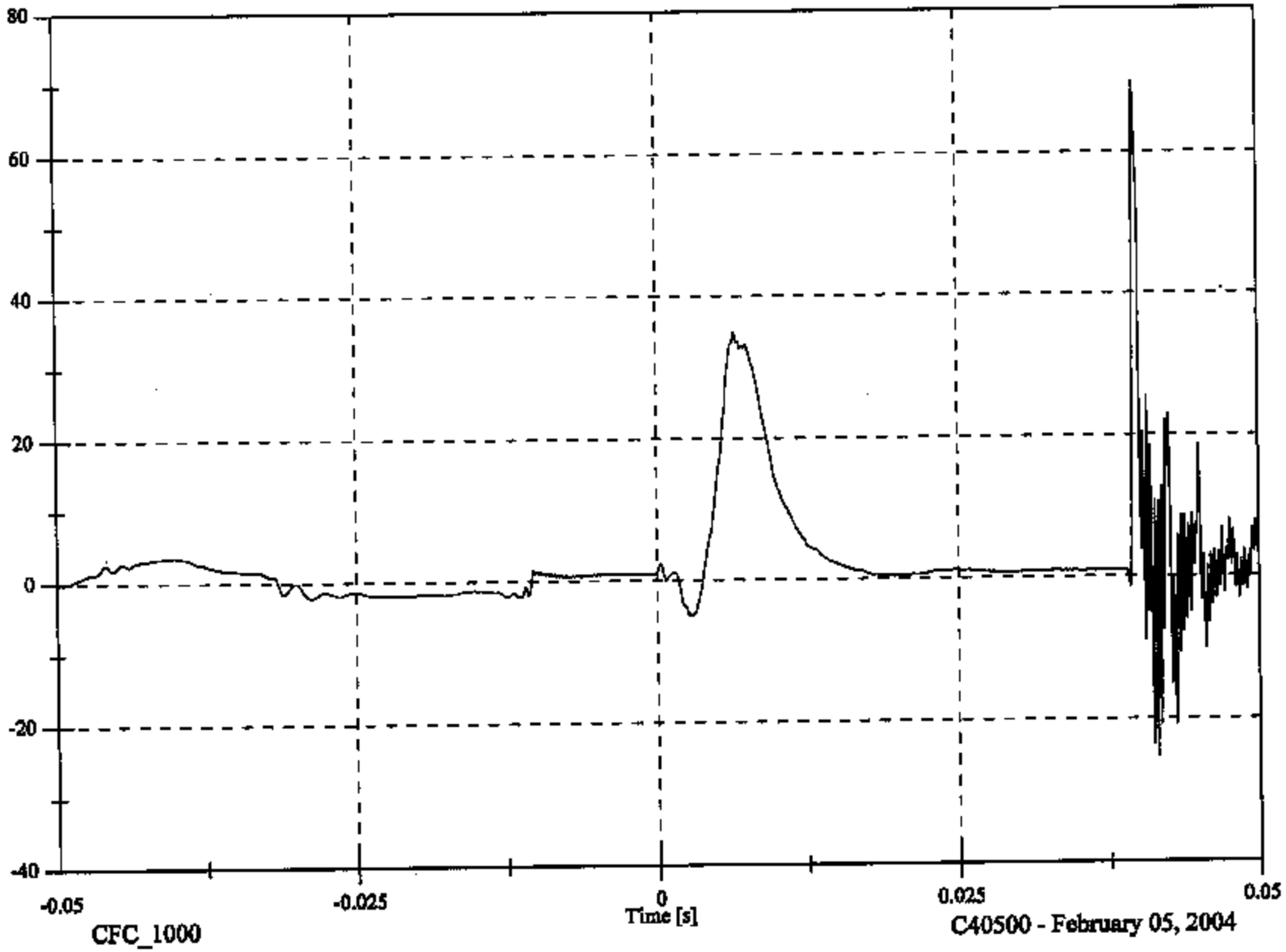

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 72.5 [g] at 0.040 [s]
Min: -167.1 [g] at 0.006 [s]
C40500 Passenger Side AP1 Impact Plot #1
g
100
50
0
-50
-100
-150
-200
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Y Acceleration
Max: 32.3 [g] at 0.040 [s]
Min: -24.0 [g] at 0.040 [s]
C40500 Passenger Side AP1 Impact Plot #2
g
40
30
20
10
0
-10
-20
-30
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 05, 2004

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Z Acceleration

Max: 69.7 [g] at 0.040 [s]
Min: -25.3 [g] at 0.041 [s]

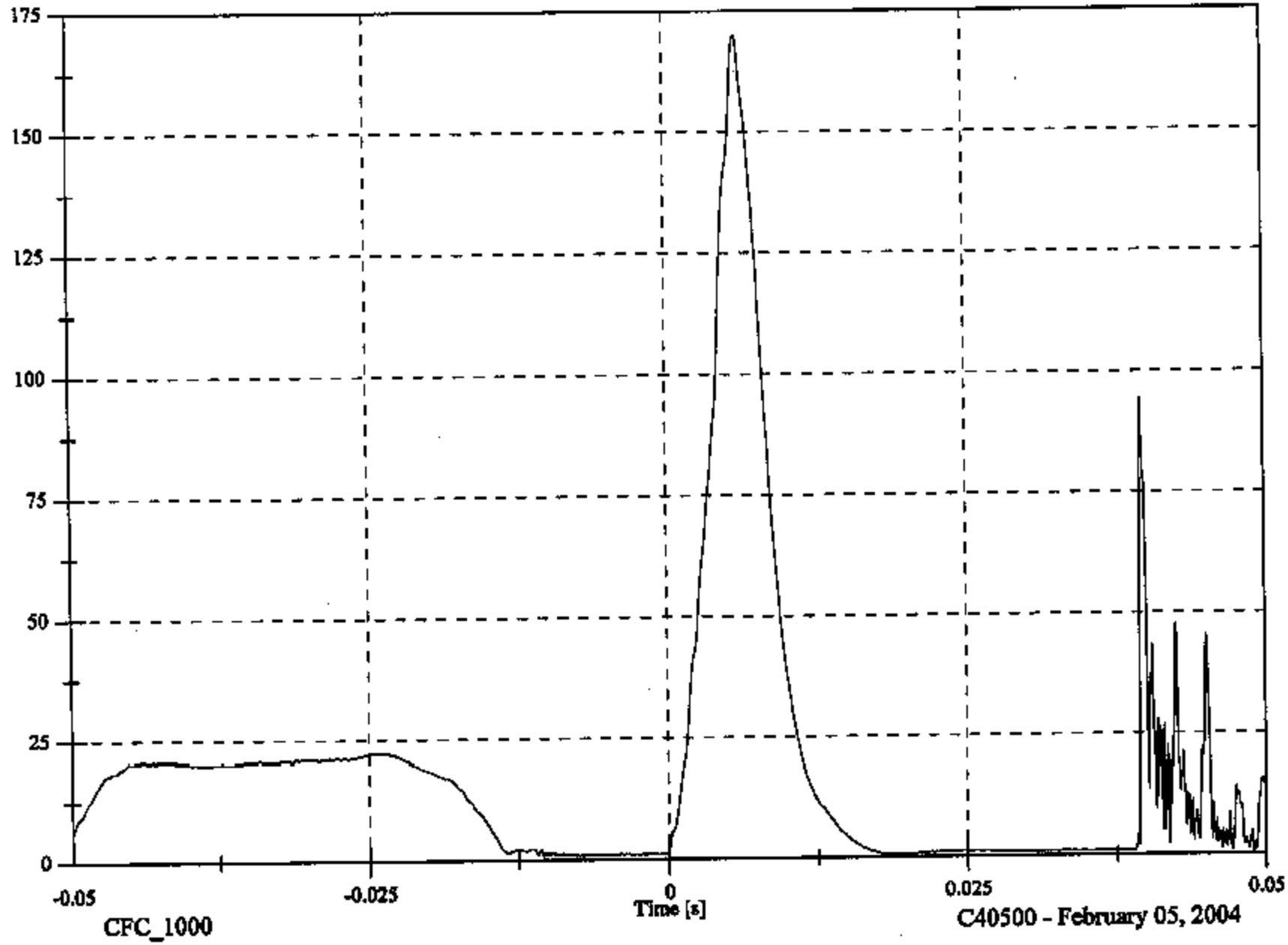


C40500 Passenger Side API Impact Plot #3

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Resultant

Max: 170.0 [g] at 0.006 [s]
Min: 0.4 [g] at 0.049 [s]



C40500 Passenger Side AP1 Impact Plot #4

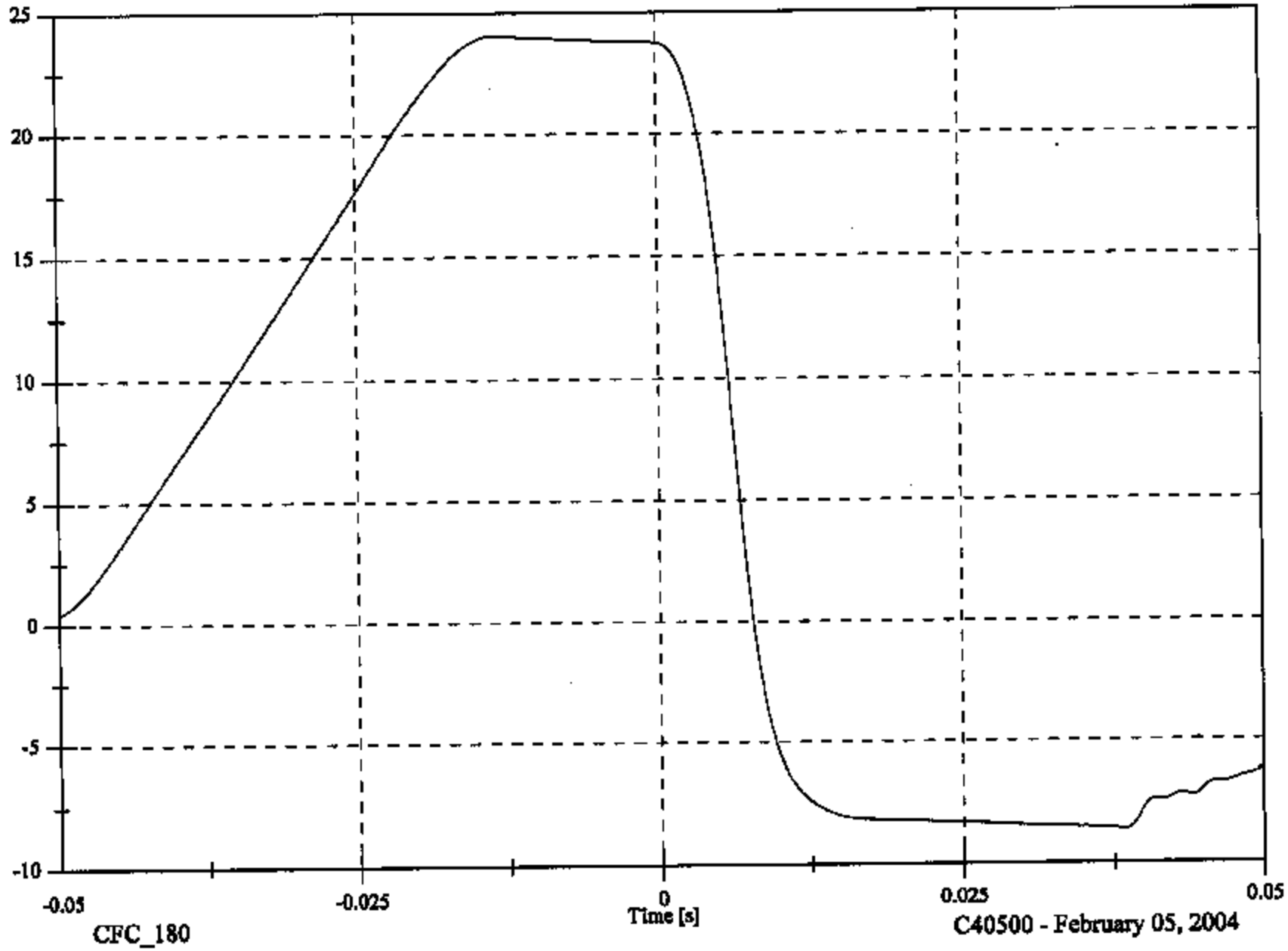
CFC_1000

C40500 - February 05, 2004

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

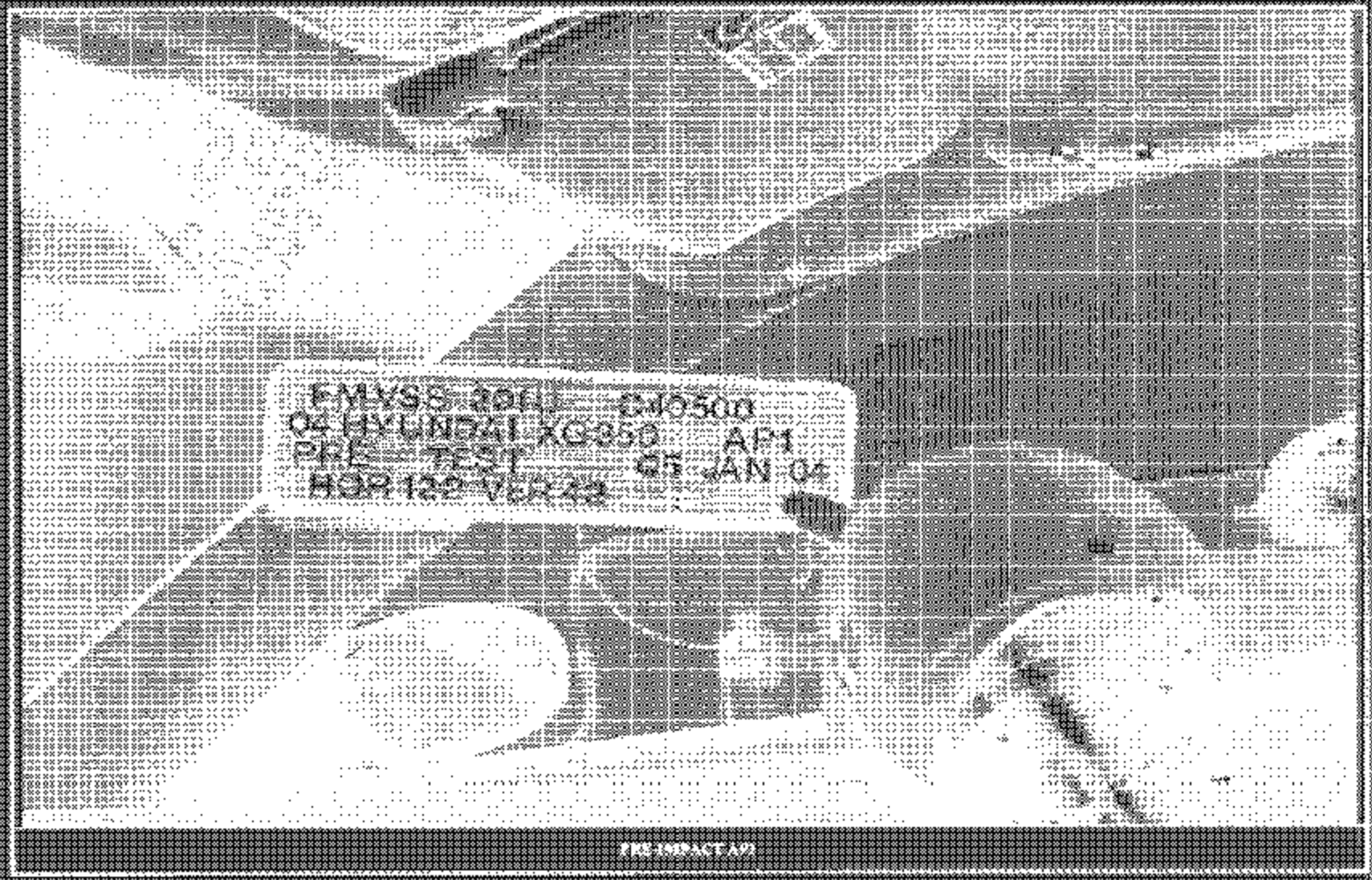
Max: 24.0 [KPH] at -0.013 [s]
Min: -8.6 [KPH] at 0.038 [s]

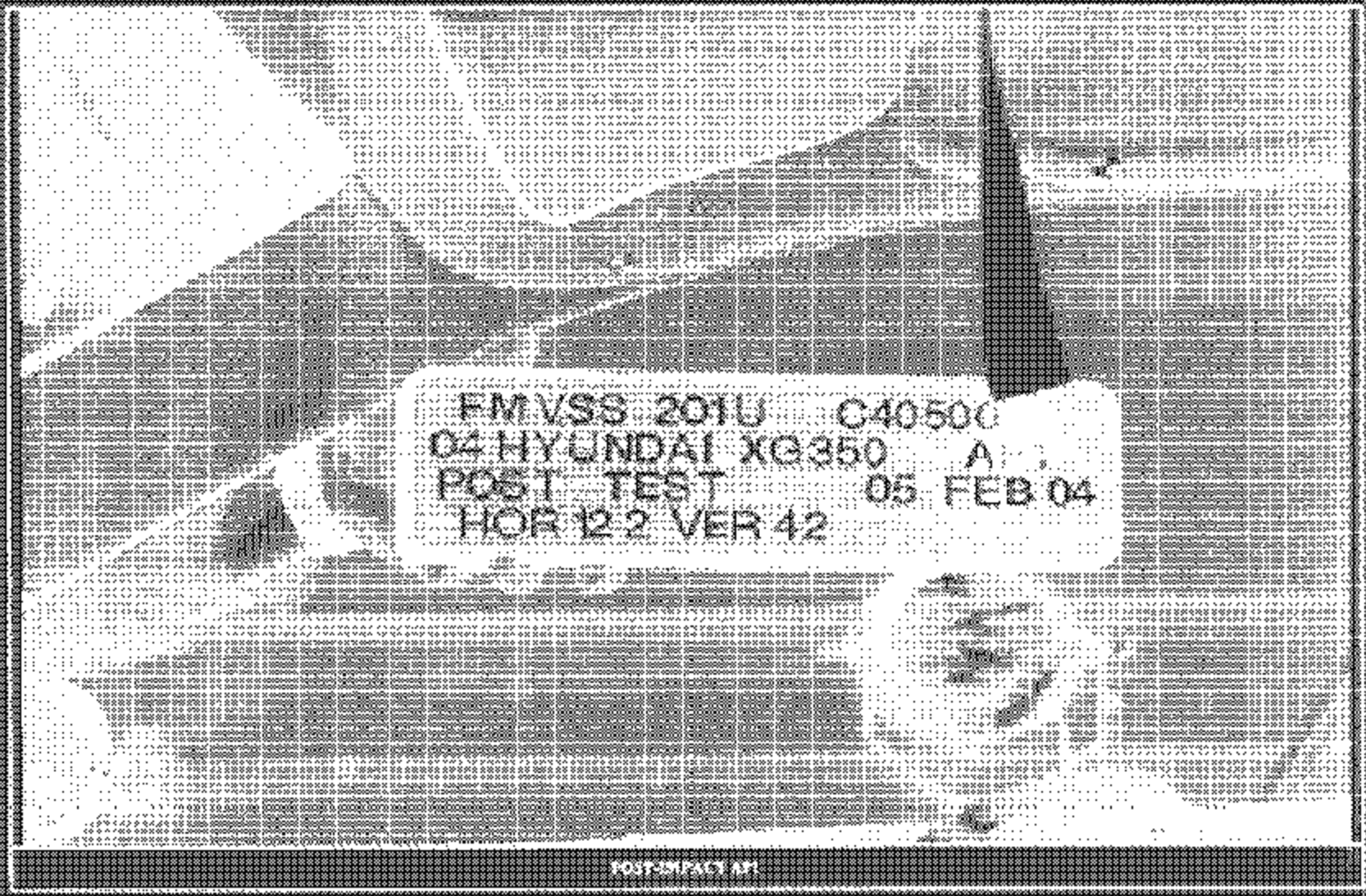


C40500 Passenger Side API Impact Plot #5

CFC_180

C40500 - February 05, 2004


FMVSS 208
05 HYUNDAI XG350
PRE - TEST
HSR 12° V 32.2
CMOS00
AP1
25 JAN 04
PRE-IMPACT AP1



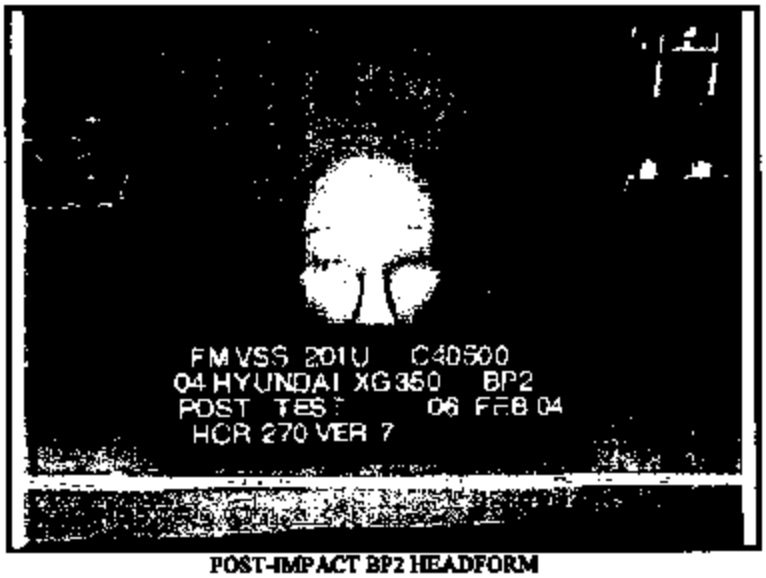
POST-IMPACT #1

X750-05

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003 (SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	07
Test Date:	February 6, 2004
Target Location:	B-Pillar Seat Belt Anchorage
Target Code:	BP2
Horizontal Impact Angle:	270°
Vertical Impact Angle:	7°
Ambient Temperature:	22°C
Relative Humidity:	20
Time of Impact:	9:45
Headform Number:	0805

Impact Point Description (from lower midpoint on midsagittal line)				
On Centerline	3		mm right	x mm left
On Centerline	8	mm up		



POST-IMPACT BP2 HEADFORM

Free Motion HIC	854.2
HIC(d)	810.9
Impact Velocity (kph)	23.59
HIC T1 (msec)	1.7
HIC T2 (msec)	7.7

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - BP2

FMH Headform 805

Test Date: February 06, 2004

Location: BP2

Work File: BP2

TEST RESULTS

Lab Temperature: 22 C

Lab Humidity: 20 %

Velocity at Impact: 23.59 KPH

Free Flight Distance: 214.61 mm

HICd: 810.9

HIC (36ms): 854.2

t1: 1.7 msec

t2: 7.7 msec

Duration: 6.0 msec

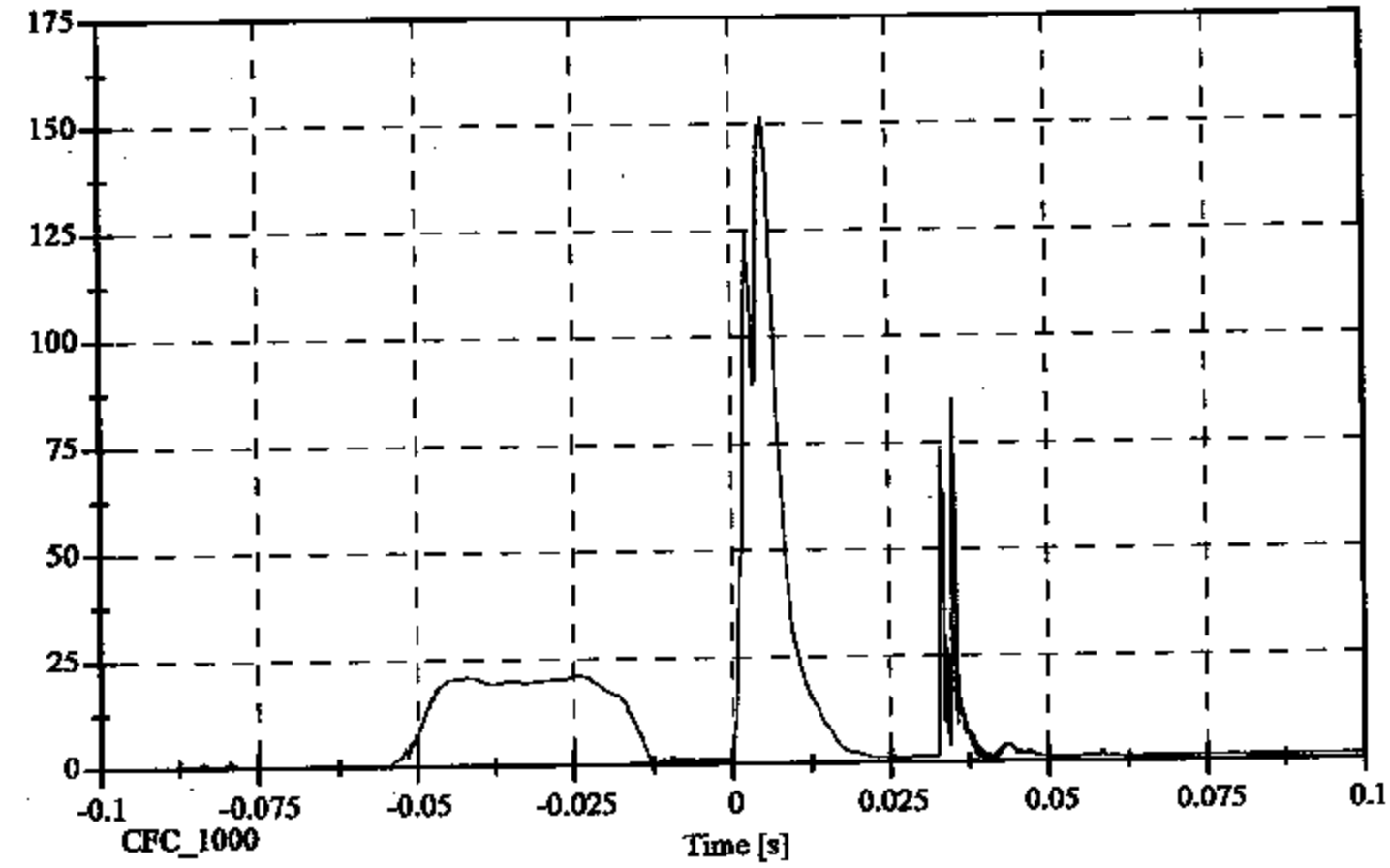
Average Acceleration: 9.4 g

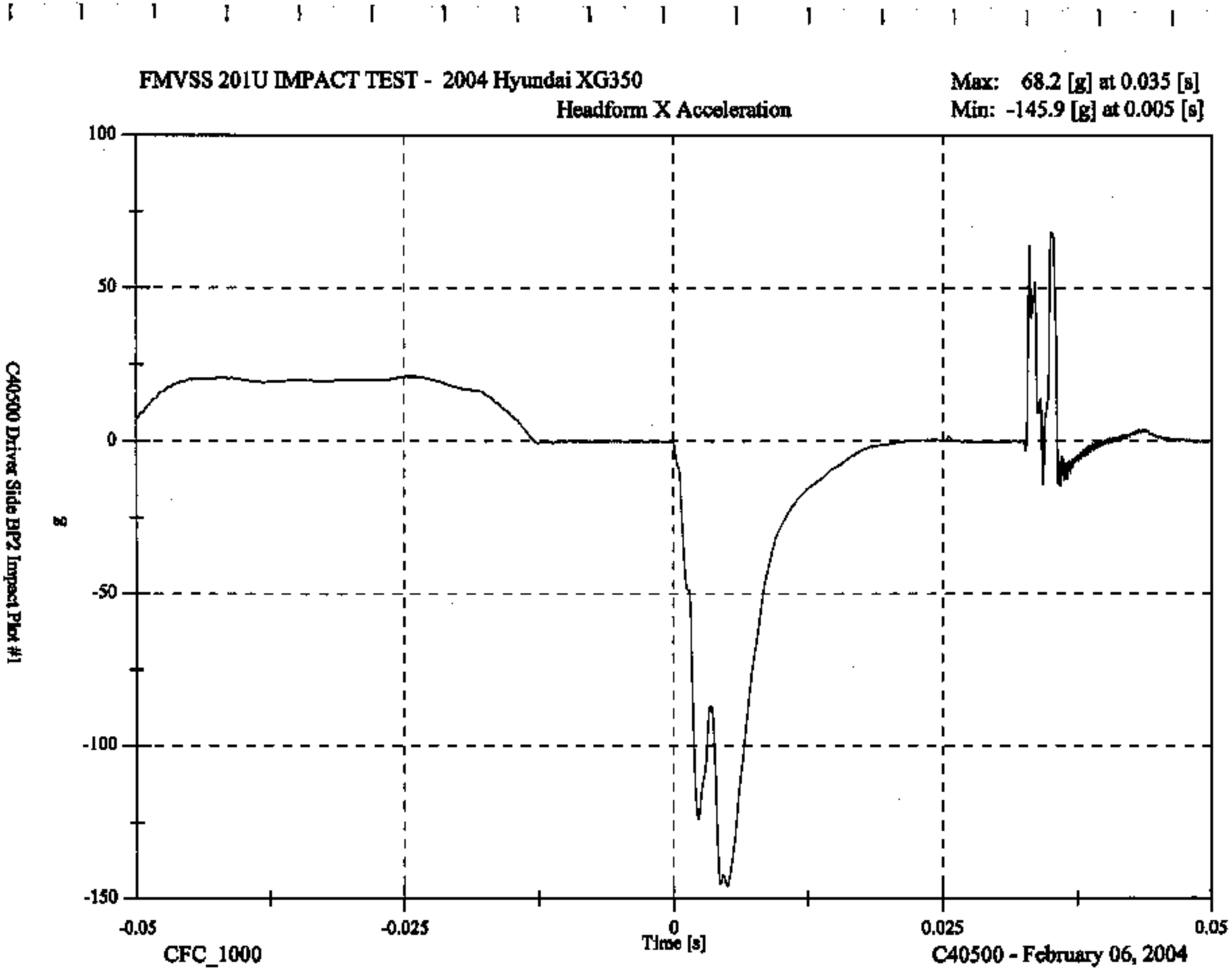
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

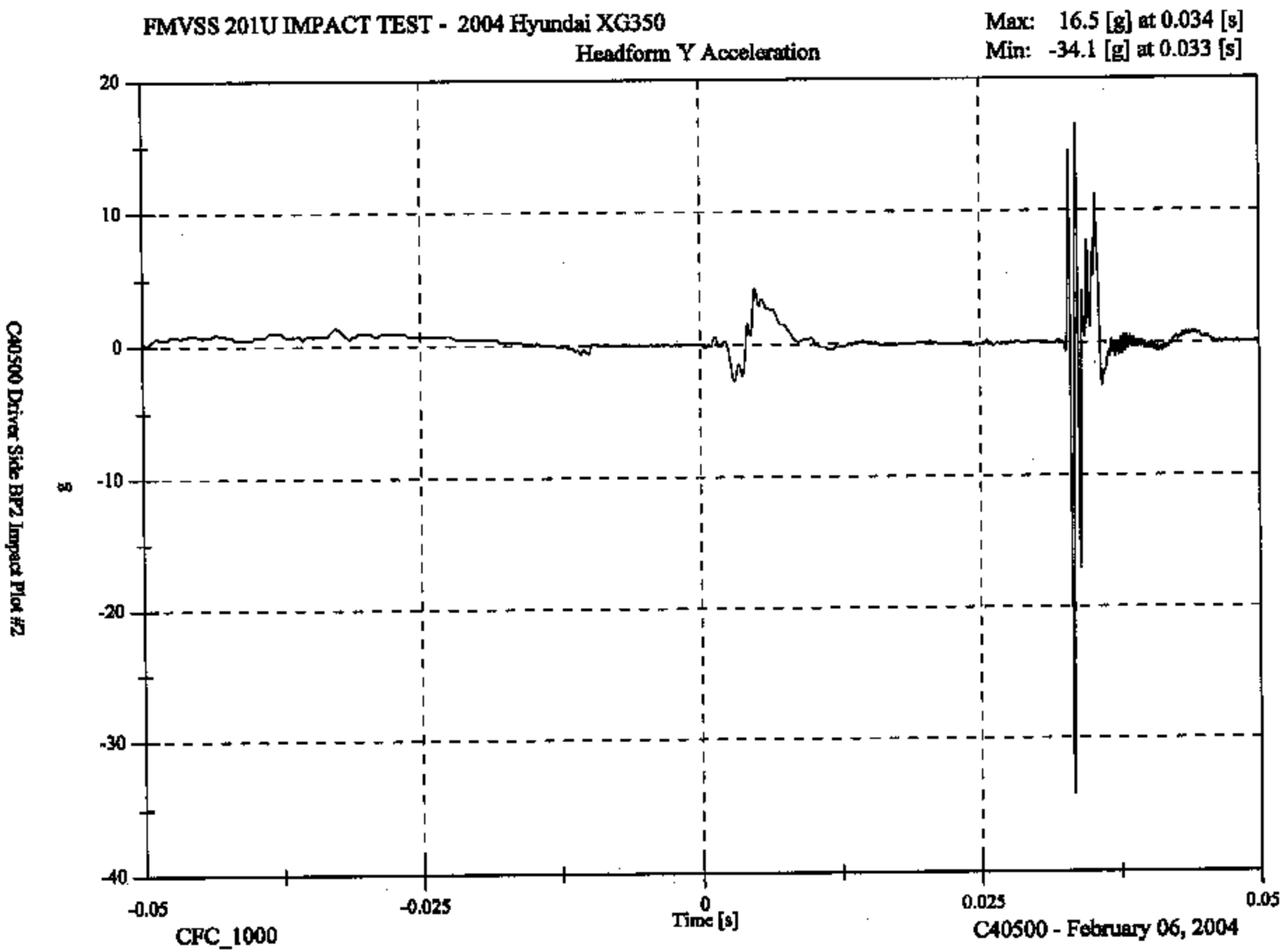
Headform Resultant

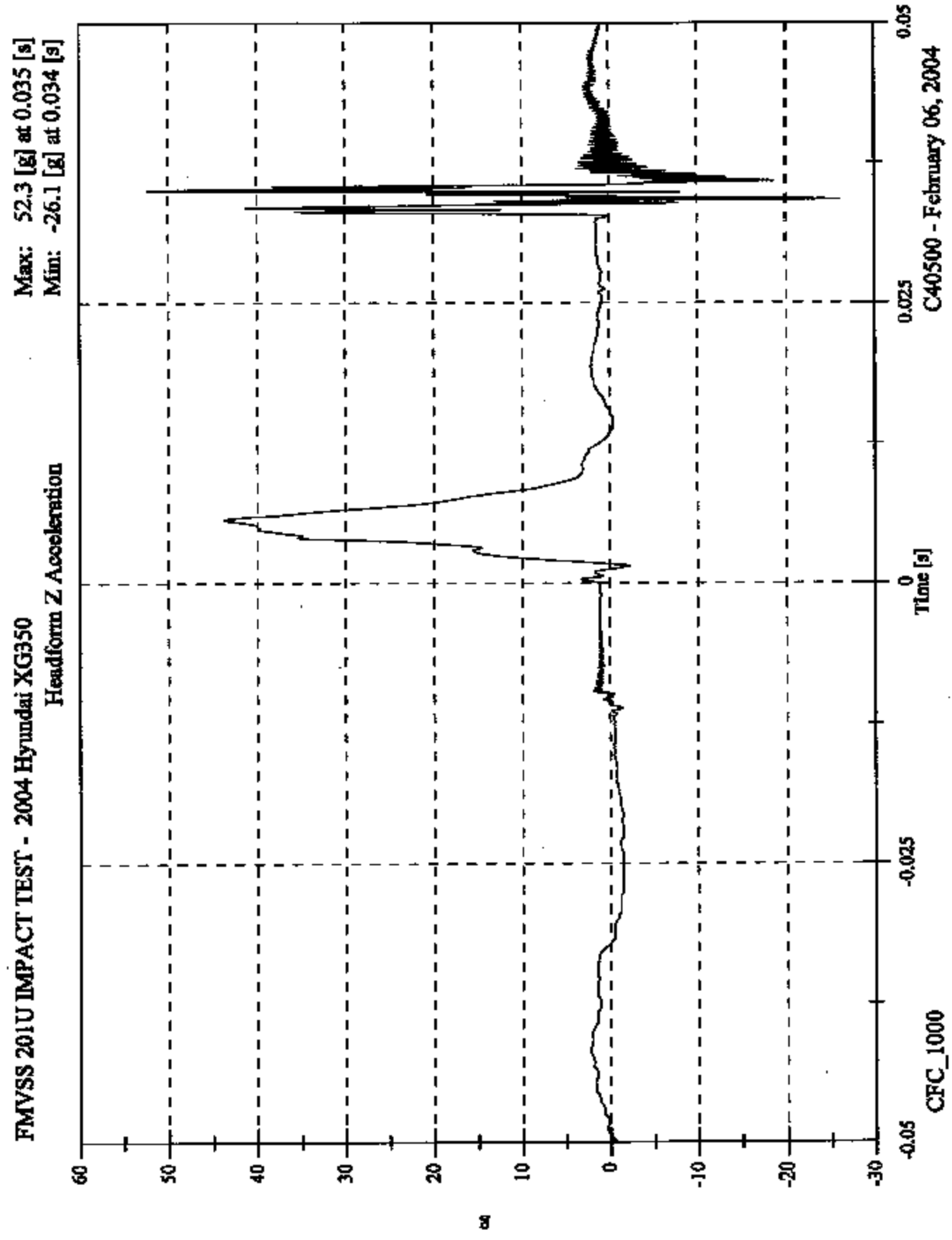
Max: 151.3 [g] at 0.005 [s]

Min: 0.0 [g] at -0.074 [s]

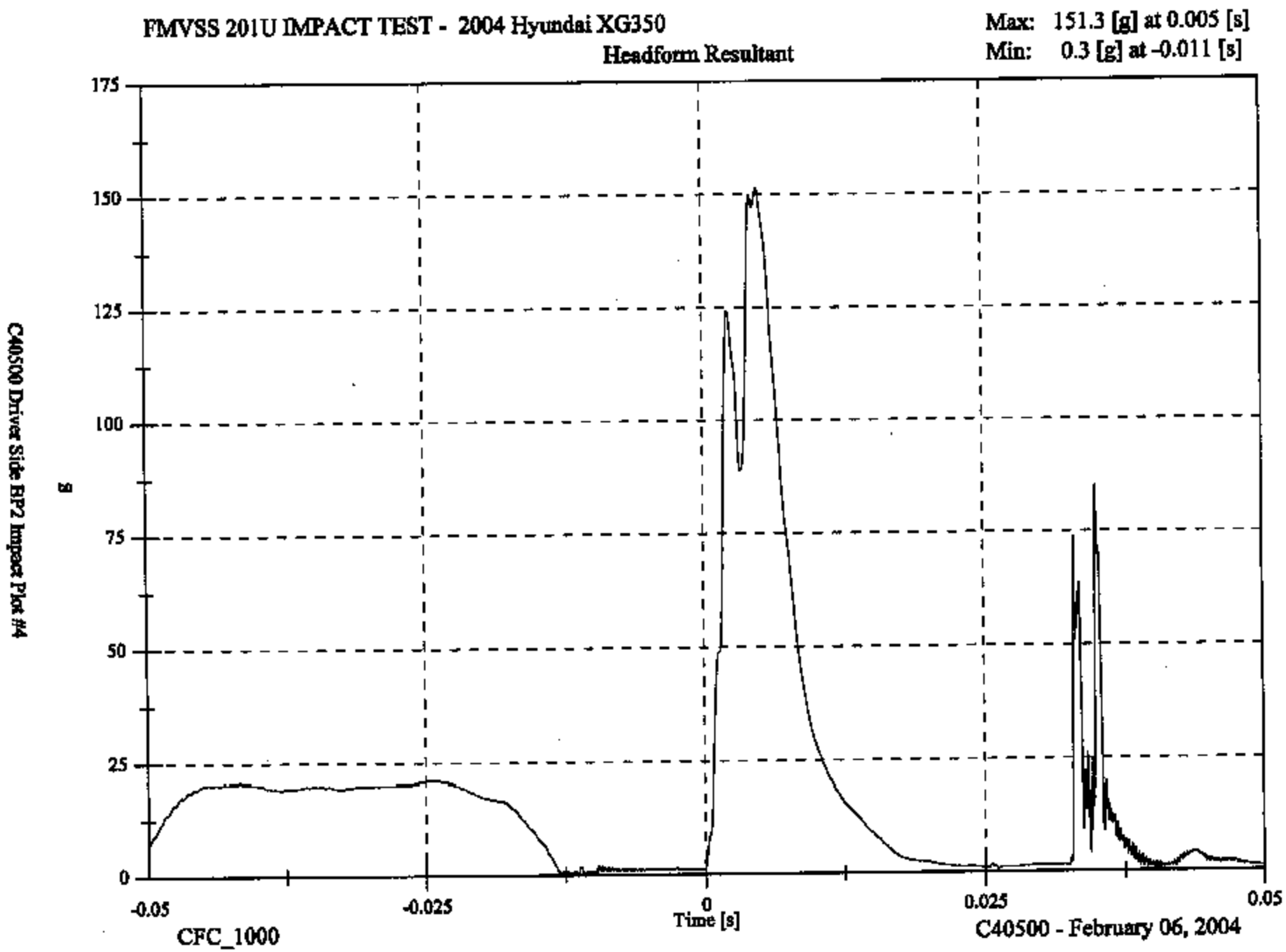



FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 68.2 [g] at 0.035 [s]
Min: -145.9 [g] at 0.005 [s]
100
50
0
-50
-100
-150
g
-0.05
-0.025
0
0.025
0.05
Time [s]
C40500 Driver Side BP2 Impact Plot #1
CFC_1000
C40500 - February 06, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Y Acceleration
Max: 16.5 [g] at 0.034 [s]
Min: -34.1 [g] at 0.033 [s]
C40500 Driver Side BP2 Impact Plot #2
g
20
10
0
-10
-20
-30
-40
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004



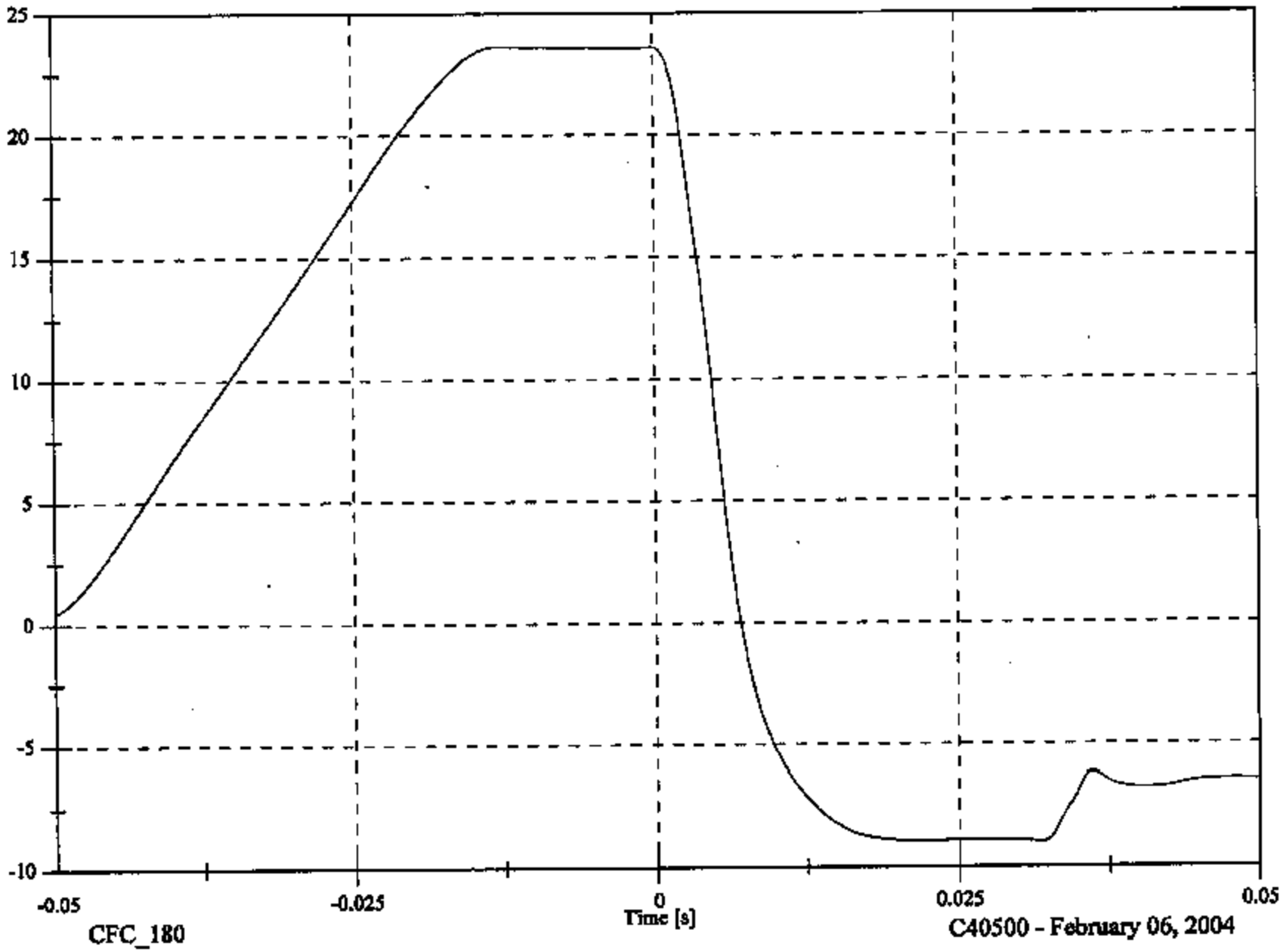
C40500 Driver Side BP2 Impact Plot #3


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 151.3 [g] at 0.005 [s]
Min: 0.3 [g] at -0.011 [s]
175
150
125
100
75
50
25
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004
C40500 Driver Side RP2 Impact Plot #4

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

Max: 23.6 [KPH] at -0.013 [s]
Min: -9.0 [KPH] at 0.032 [s]



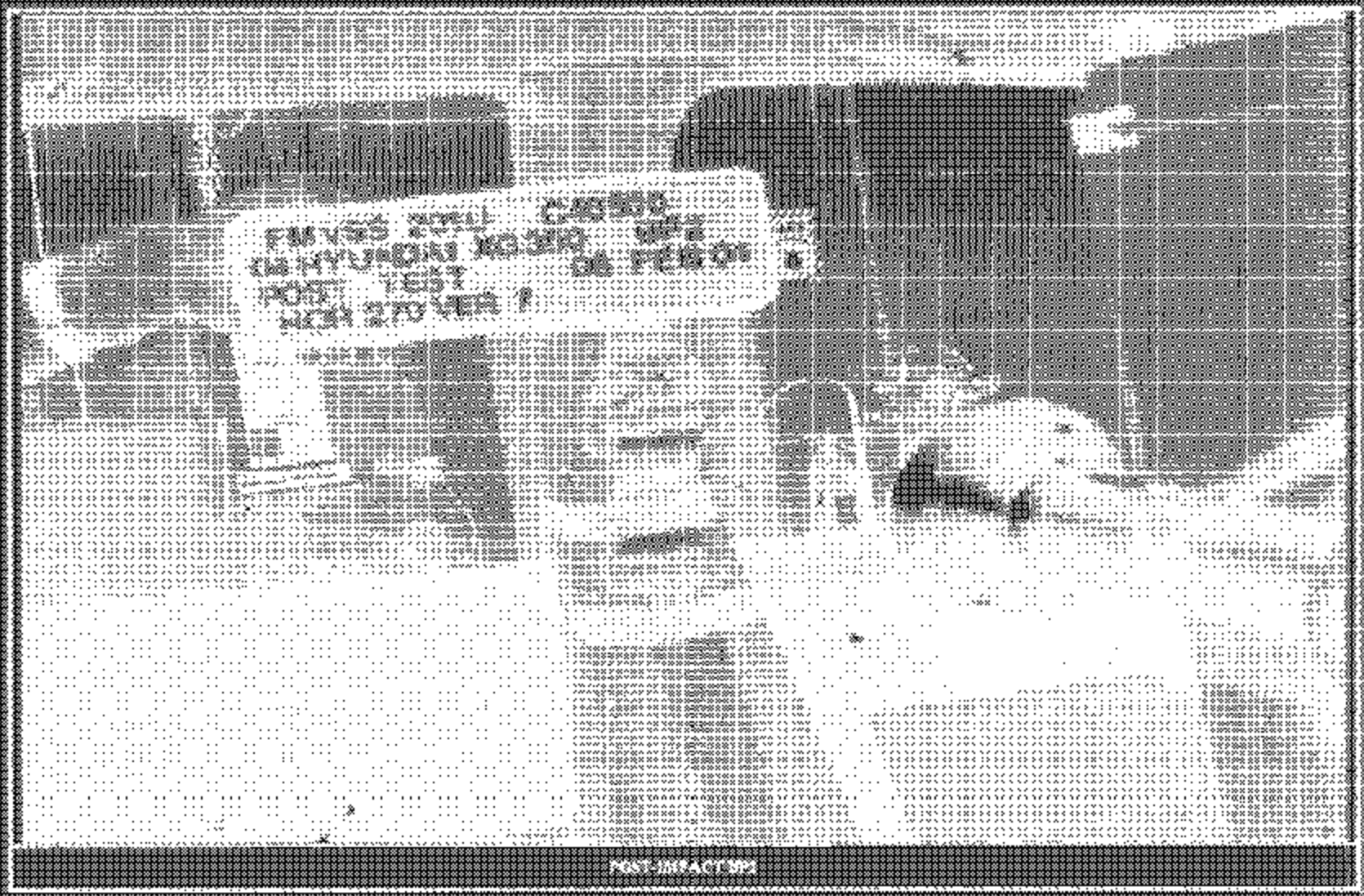
C40500 Driver Side BP2 Impact Plot #5

CFC_180

C40500 - February 06, 2004

PRE-IMPACT BP2

5770-04



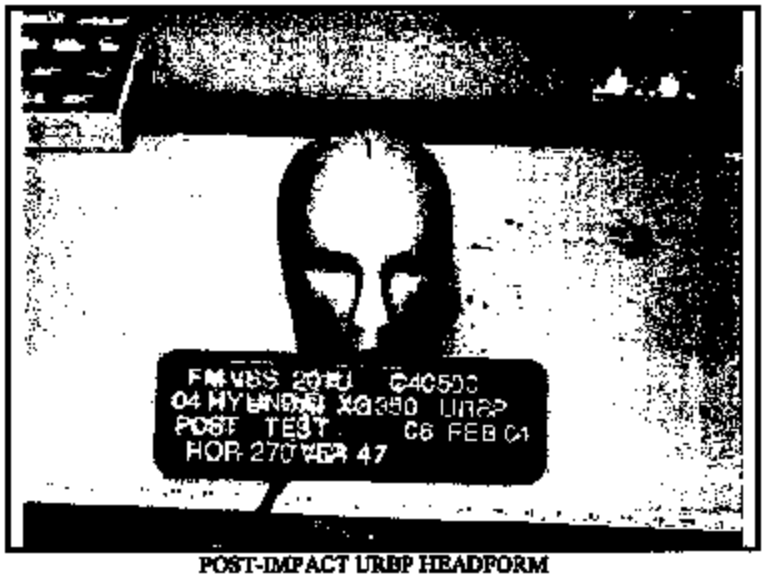
POST-IMPACT SPI

87-10-06

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	08
Test Date:	February 6, 2004
Target Location:	Upper Roof
Target Code:	URBP
Horizontal Impact Angle:	270°
Vertical Impact Angle:	47°
Ambient Temperature:	22°C
Relative Humidity:	20
Time of Impact:	10:10
Headform Number:	0355

Impact Point Description (from lower midpoint on midsagittal line)				
On Centerline	5	☐	mm right	☒ mm left
On Centerline	49	mm up		



POST-IMPACT URBP HEADFORM

Free Motion HIC	848.6
HIC(d)	806.7
Impact Velocity (kph)	23.42
HIC T1 (msec)	3.3
HIC T2 (msec)	10.7

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - URBP

FMH Headform 0355

Test Date: February 06, 2004

Location: URBP

Work File: URBP

TEST RESULTS

Lab Temperature: 22 C

Lab Humidity: 20 %

Velocity at Impact: 23.42 KPH

Free Flight Distance: 225.84 mm

HICd: 806.7

HIC (36ms): 848.6

t1: 3.3 msec

t2: 10.7 msec

Duration: 7.4 msec

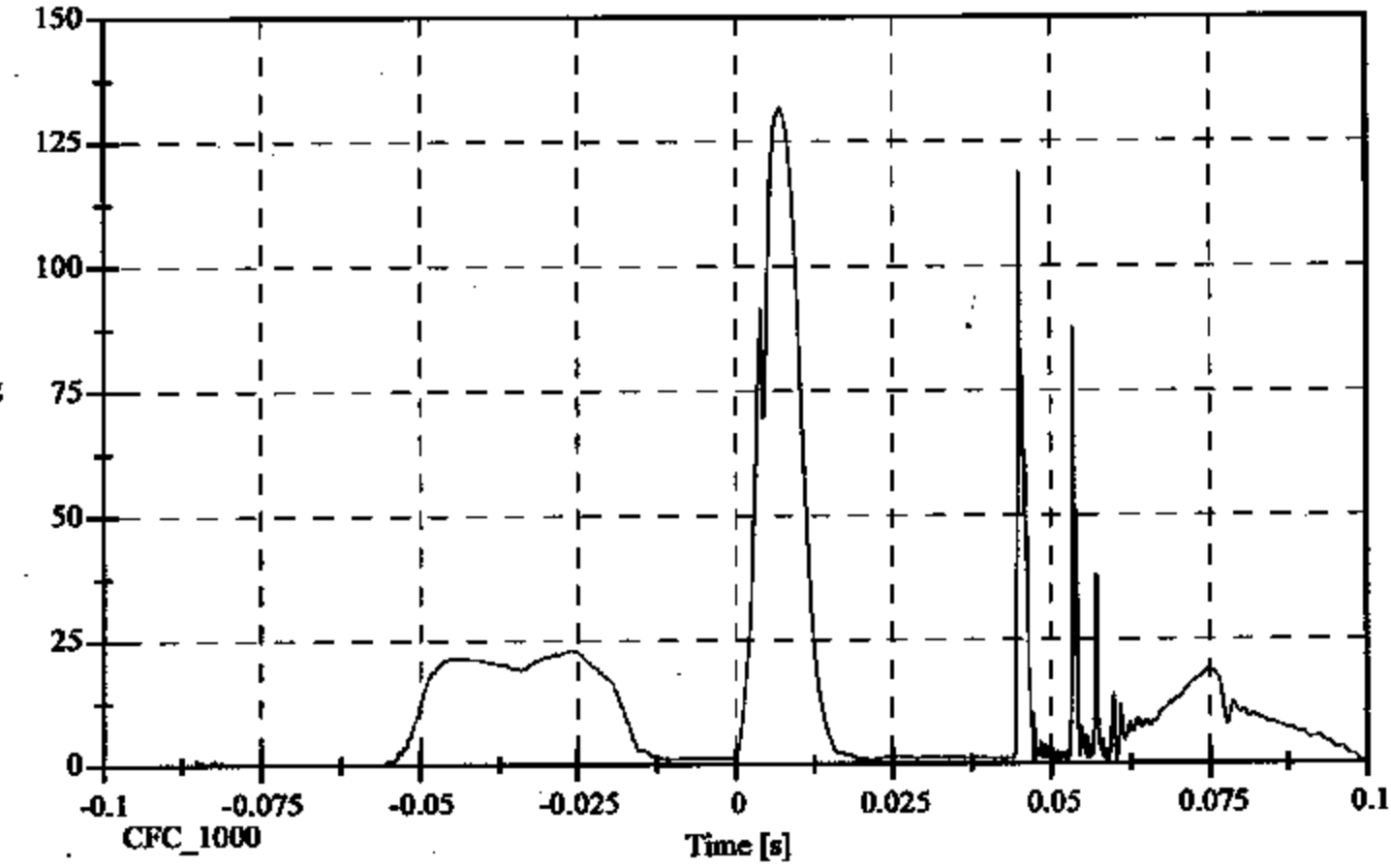
Average Acceleration: 11.5 g

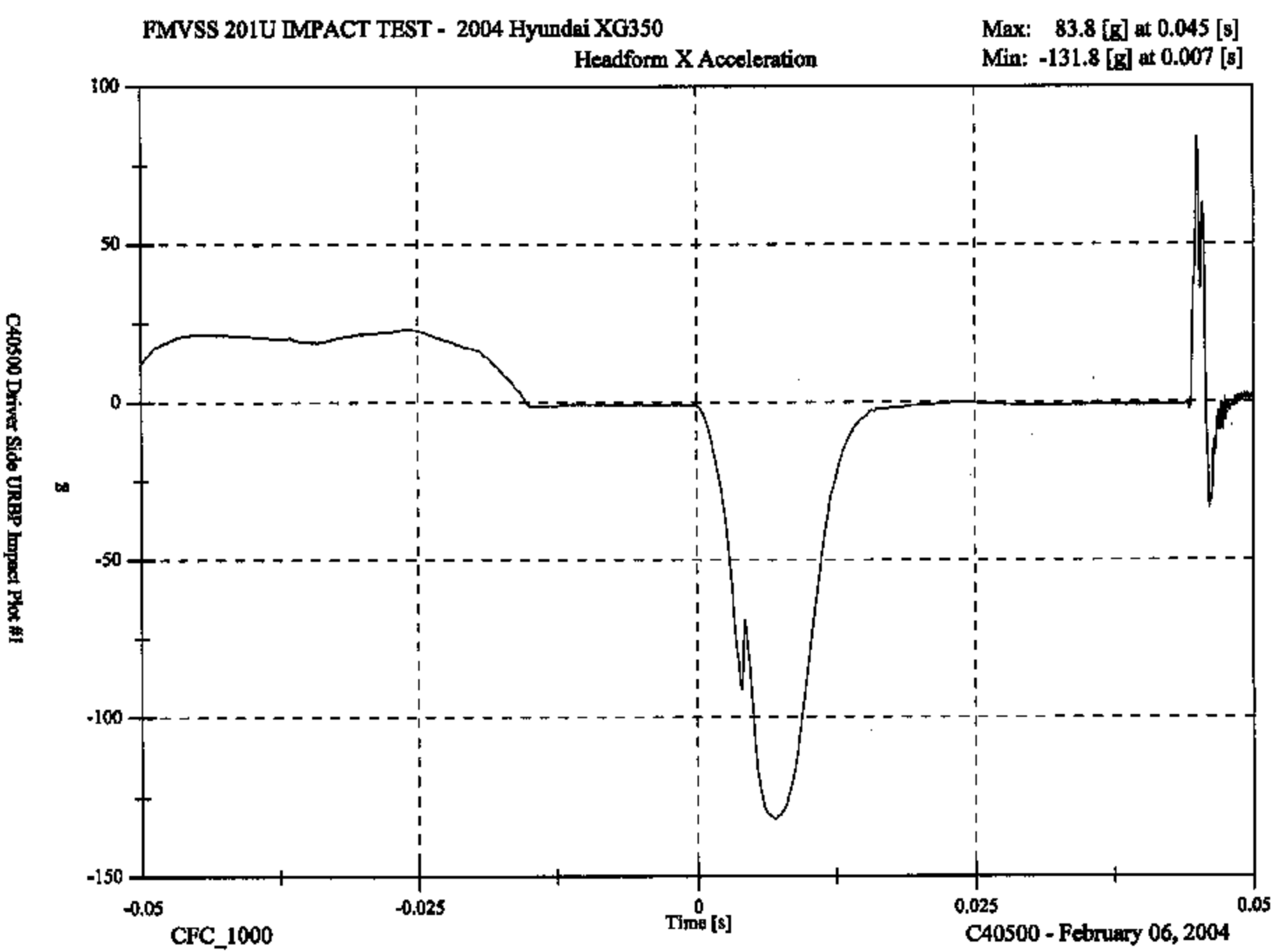
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

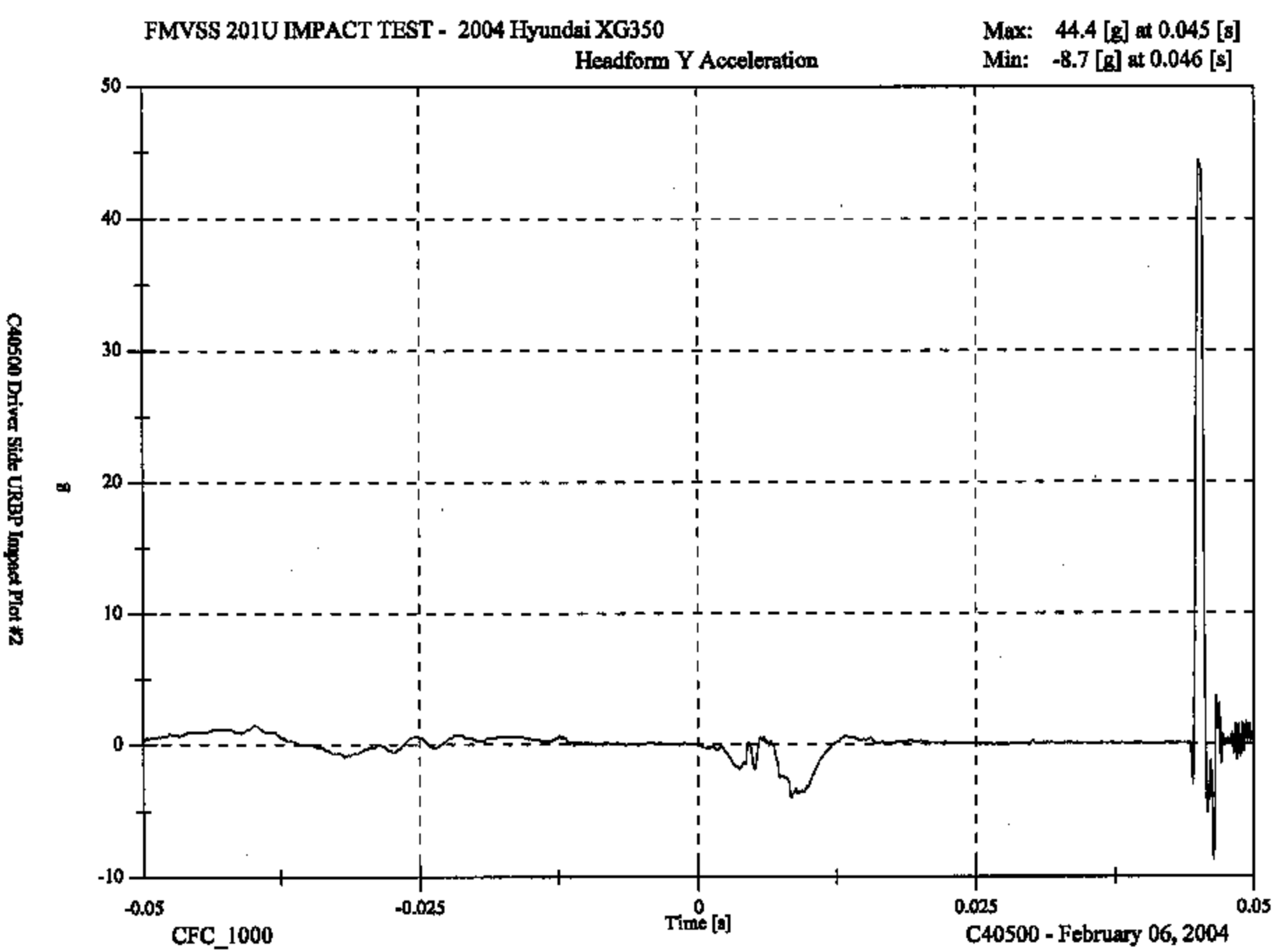
Headform Resultant

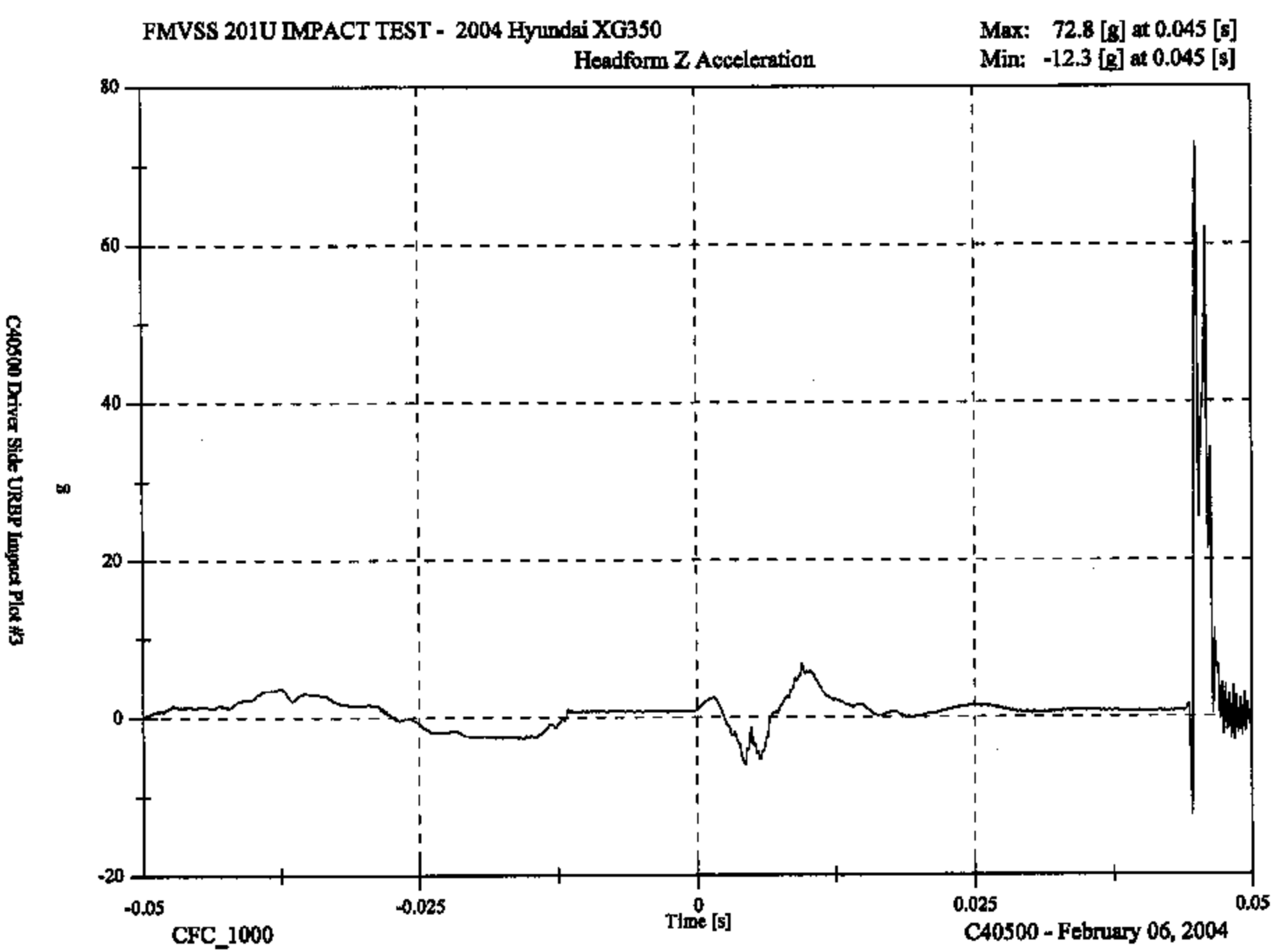
Max: 131.8 [g] at 0.007 [s]

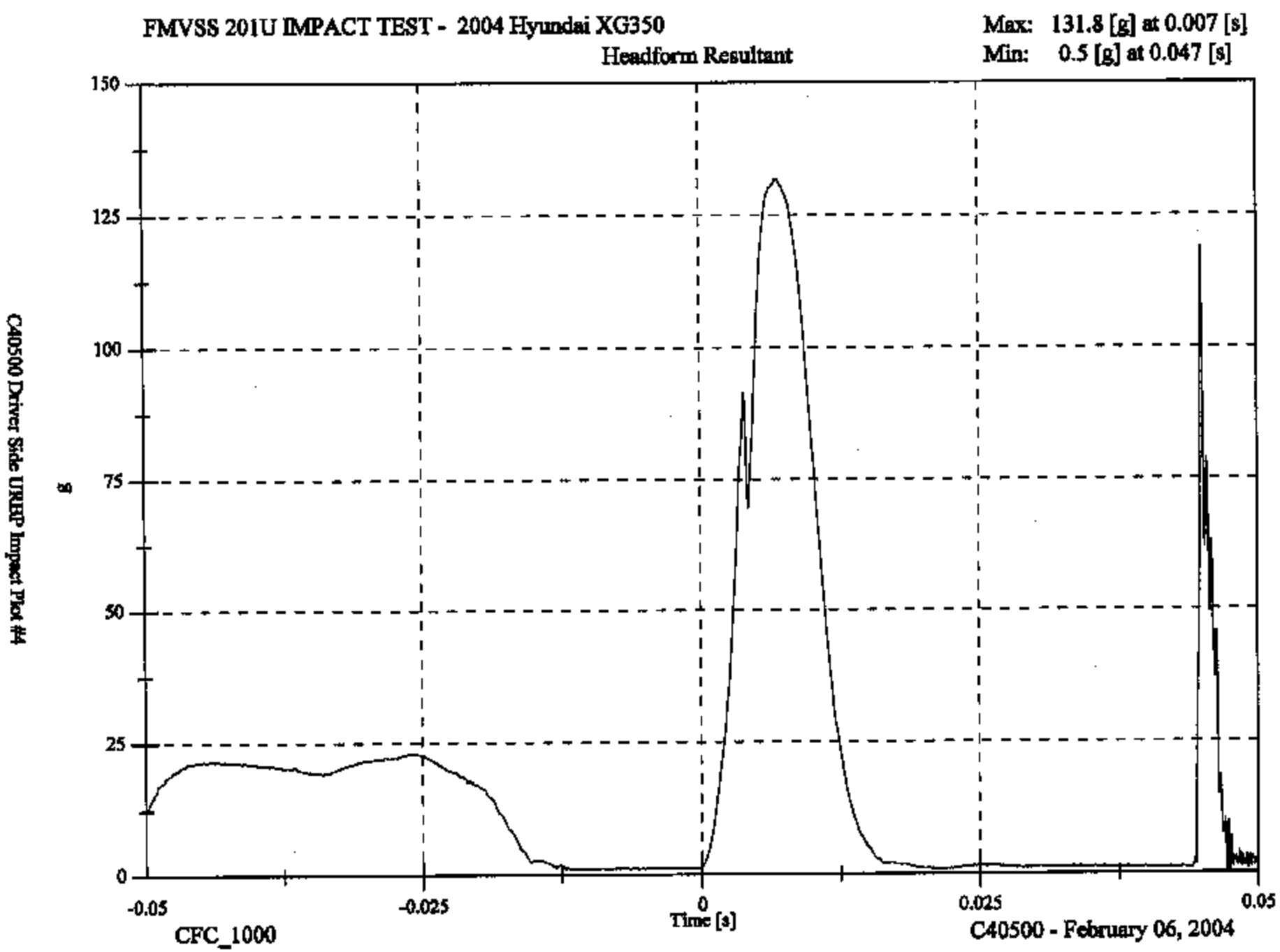
Min: 0.0 [g] at -0.097 [s]




FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 83.8 [g] at 0.045 [s]
Min: -131.8 [g] at 0.007 [s]
100
50
0
-50
-100
-150
g
C40500 Driver Side URBP Impact Plot #1
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Y Acceleration
Max: 44.4 [g] at 0.045 [s]
Min: -8.7 [g] at 0.046 [s]
C40500 Driver Side URBP Impact Plot #2
g
50
40
30
20
10
0
-10
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004

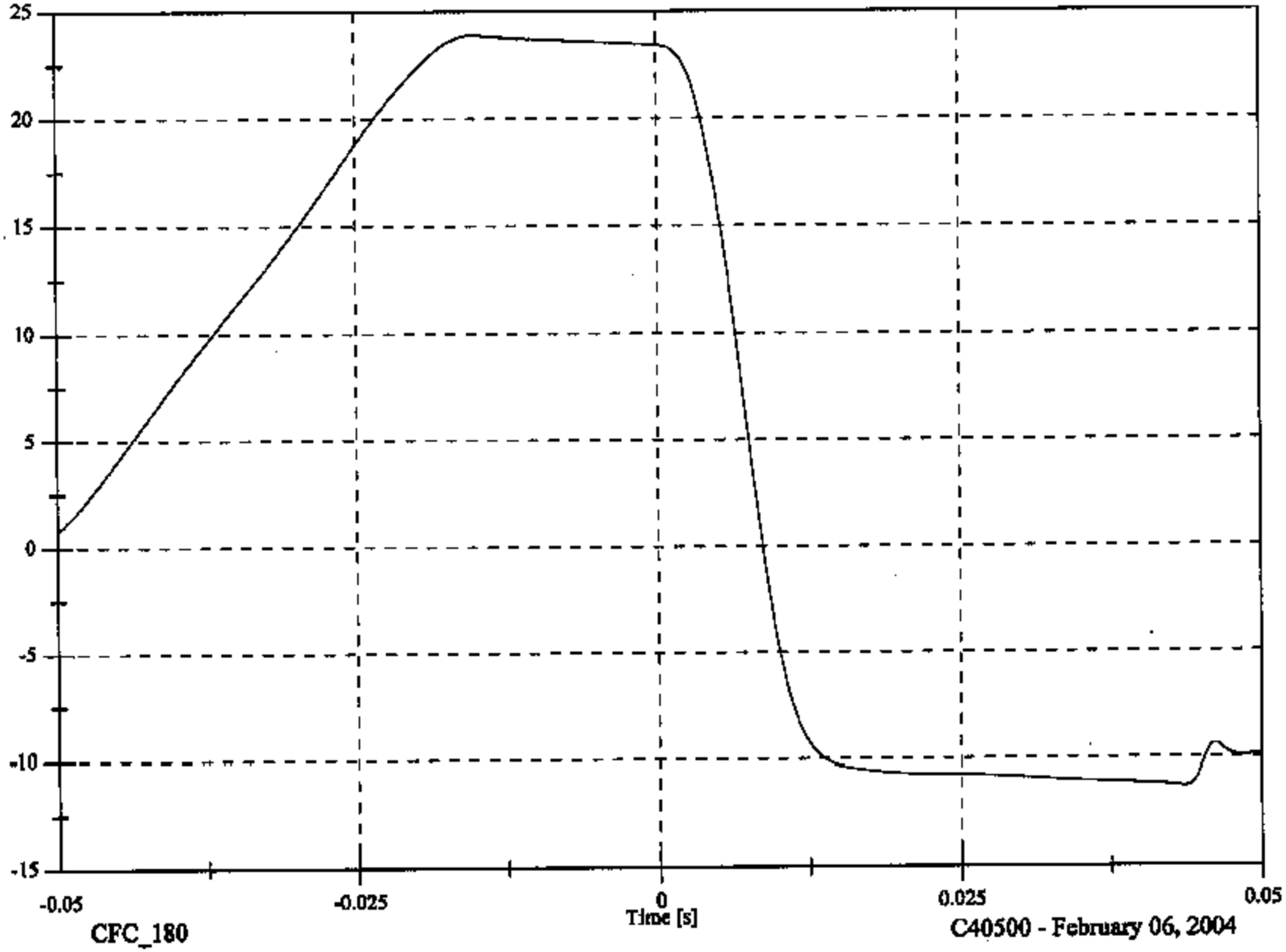

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Z Acceleration
Max: 72.8 [g] at 0.045 [s]
Min: -12.3 [g] at 0.045 [s]
C40500 Driver Side URSP Impact Plot #3
g
80
60
40
20
0
-20
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 131.8 [g] at 0.007 [s]
Min: 0.5 [g] at 0.047 [s]
C40500 Driver Side URHP Impact Plot #4
g
150
125
100
75
50
25
0
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

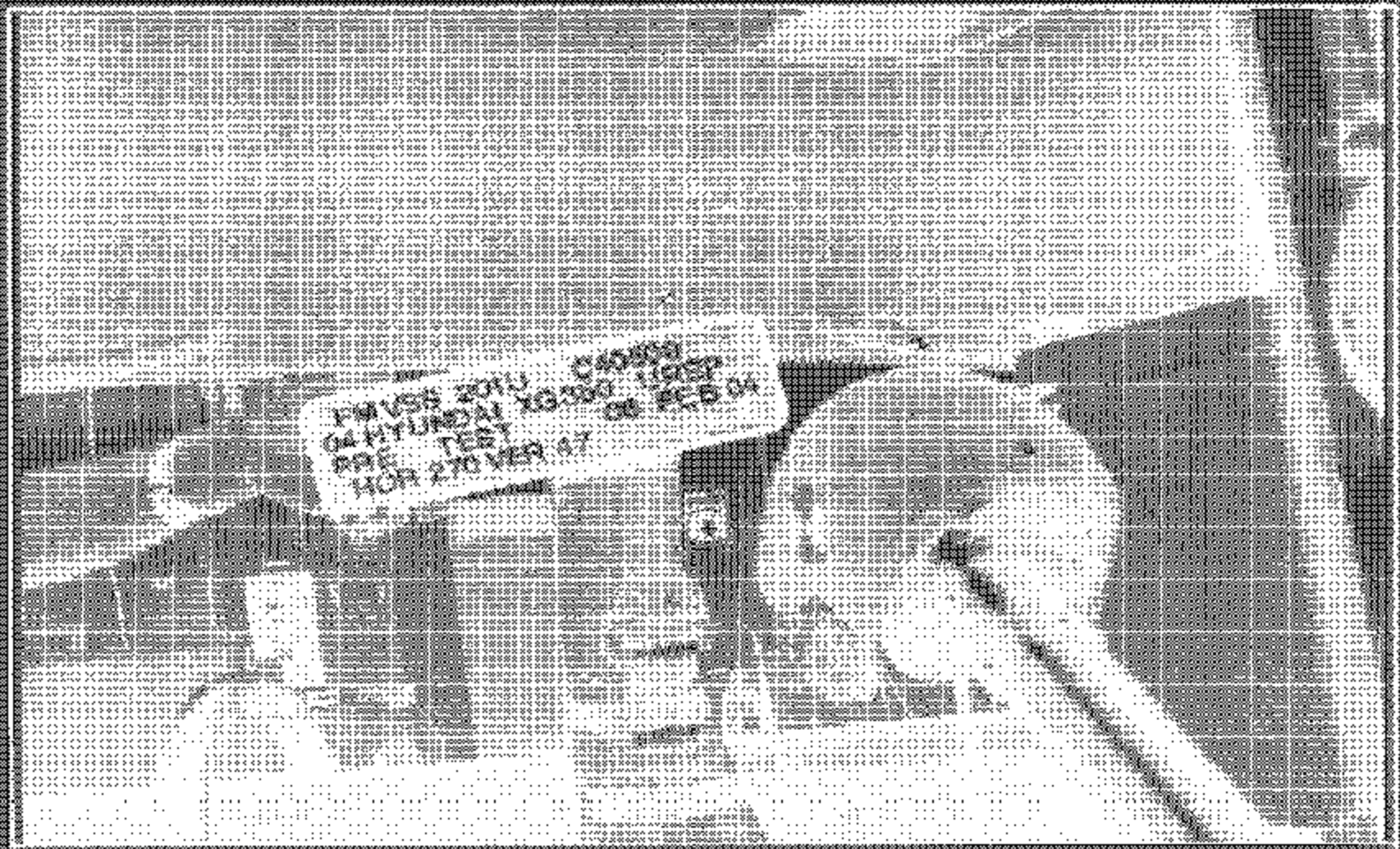
Max: 23.9 [KPH] at -0.015 [s]
Min: -11.3 [KPH] at 0.044 [s]



C40500 Driver Side URBP Impact Plot #5

CFC_180

C40500 - February 06, 2004



PRE-IMPACT CRASH

9730-05

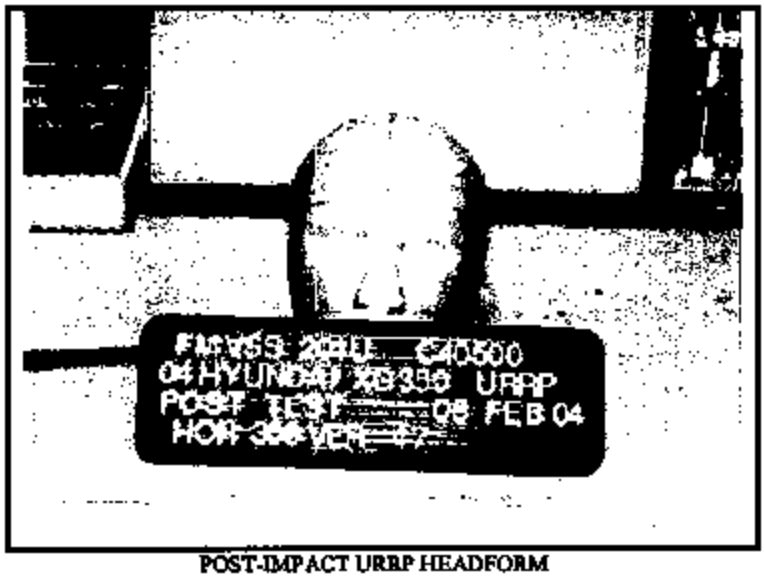
FMVSS 201U C40500
04 HYUNDAI XG350 URBP
POST TEST 06 FEB 04
47
POST IMPACT VIEW

3753-05

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003(SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	09
Test Date:	February 6, 2004
Target Location:	Upper Roof
Target Code:	URRP
Horizontal Impact Angle:	309°
Vertical Impact Angle:	47°
Ambient Temperature:	22°C
Relative Humidity:	20
Time of Impact:	10:35
Headform Number:	0062

Impact Point Description (from lower midpoint on midsagittal line)				
On Centerline	3	[x]	mm right	[ ] mm left
On Centerline	22		mm up	



POST-IMPACT URRP HEADFORM

Free Motion HIC	981.0
HIC(d)	906.5
Impact Velocity (kph)	23.38
HIC T1 (msec)	4.6
HIC T2 (msec)	9.8

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - URRP

FMH Headform 0062

Test Date: February 06, 2004

Location: URRP

Work File: URRP

TEST RESULTS

Lab Temperature: 22 C

Lab Humidity: 20 %

Velocity at Impact: 23.38 KPH

Free Flight Distance: 206.69 mm

HICd: 906.5

HIC (36ms): 981.0

t1: 4.6 msec

t2: 9.8 msec

Duration: 5.2 msec

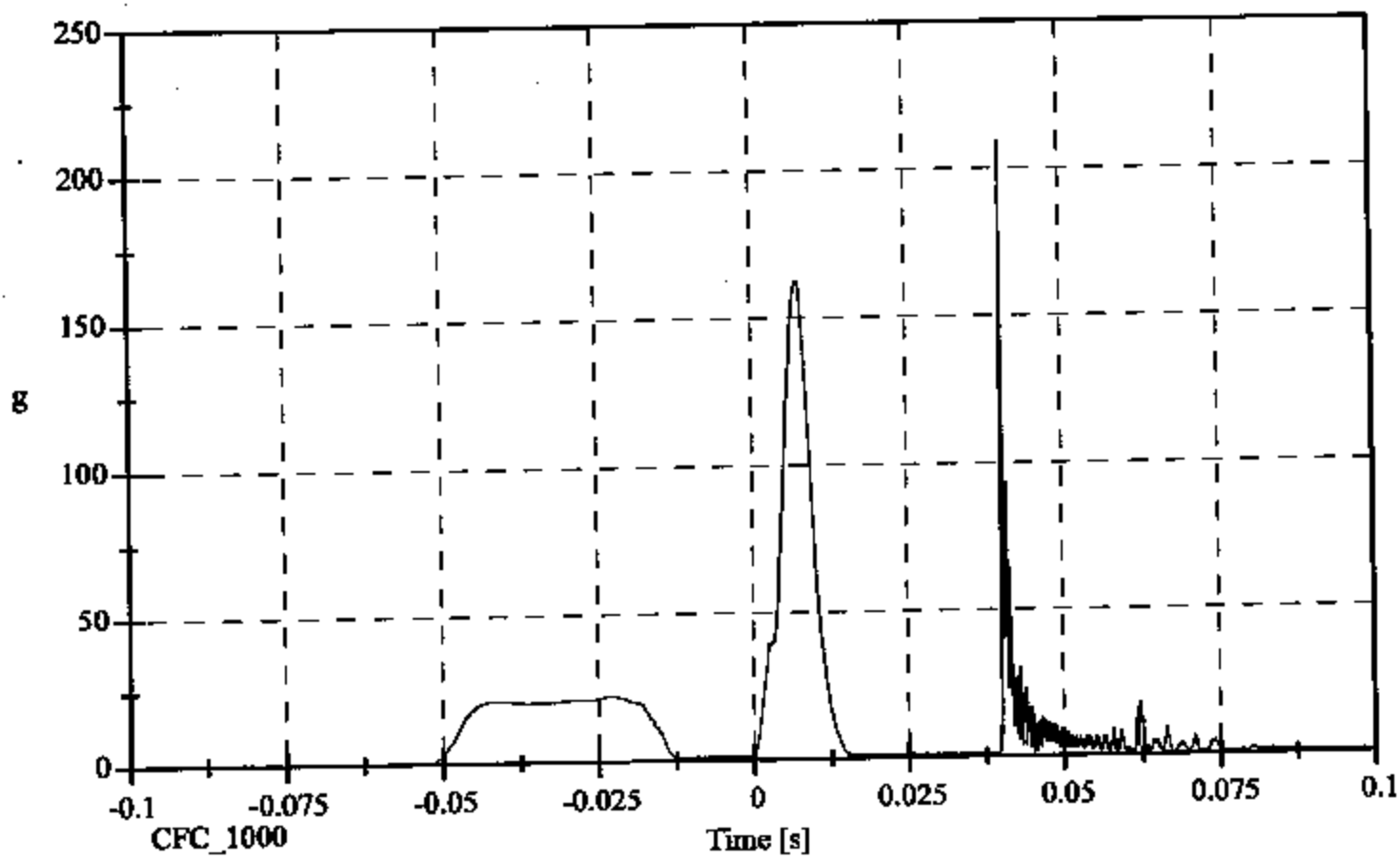
Average Acceleration: 9.9 g

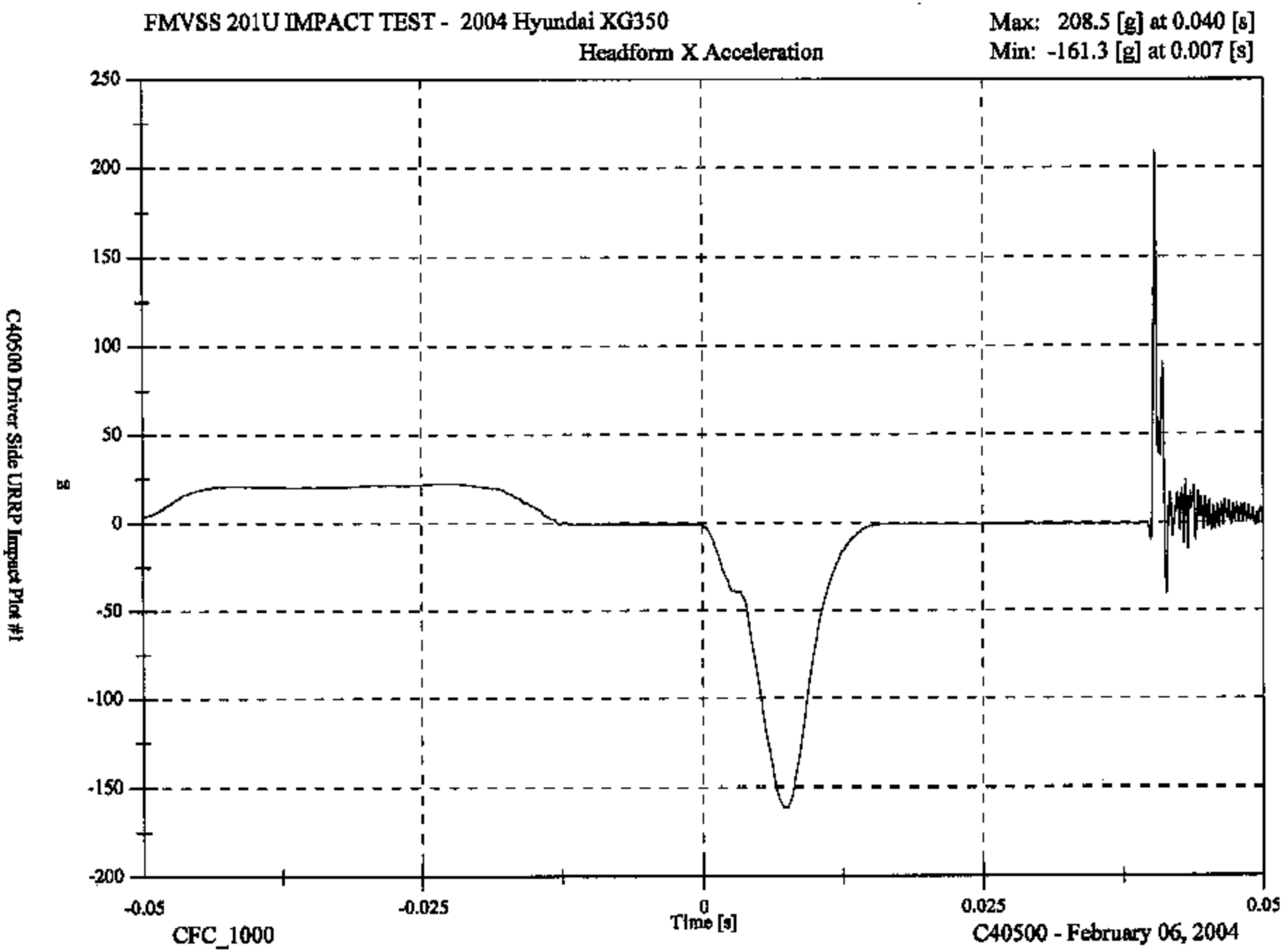
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

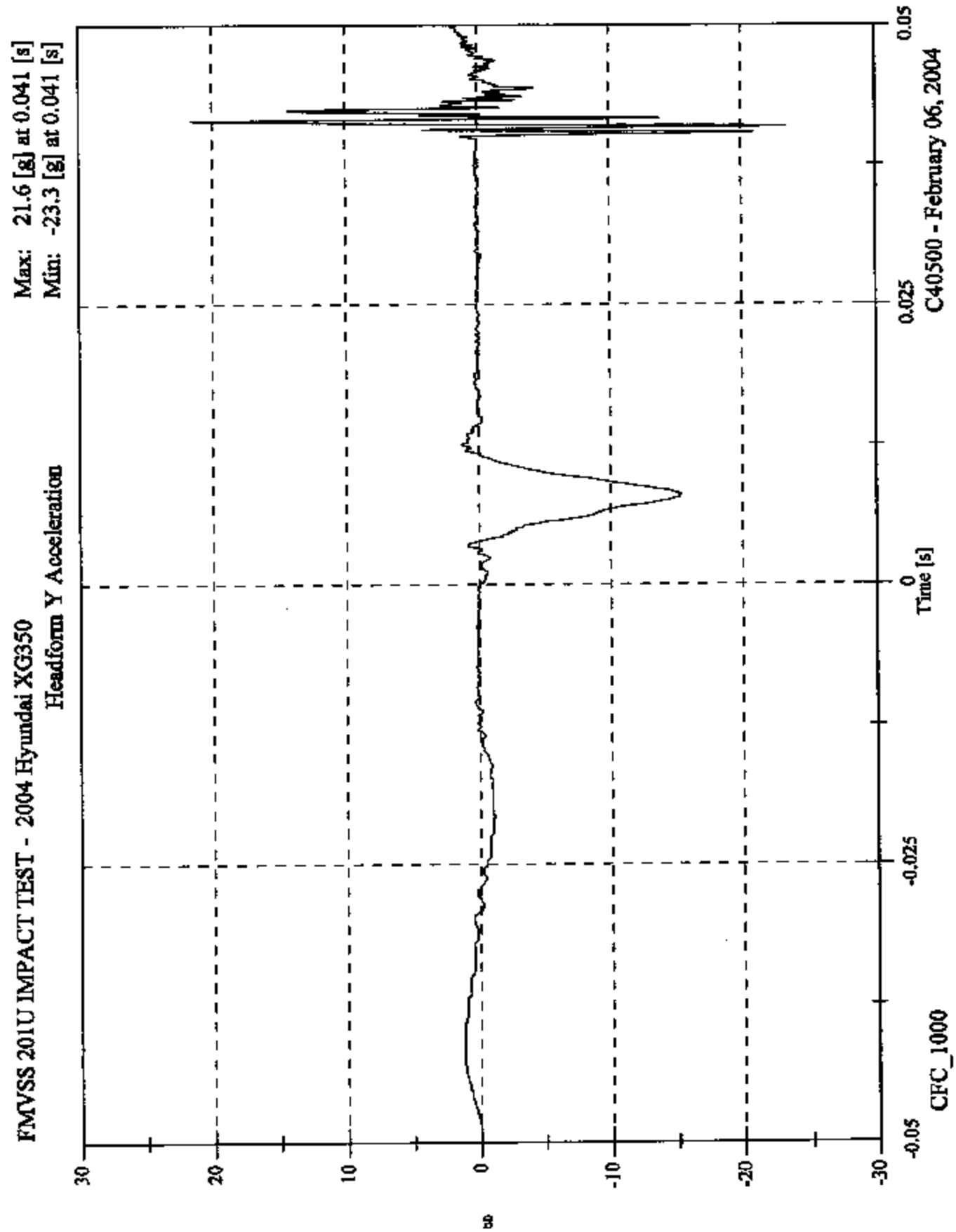
Headform Resultant

Max: 209.5 [g] at 0.040 [s]

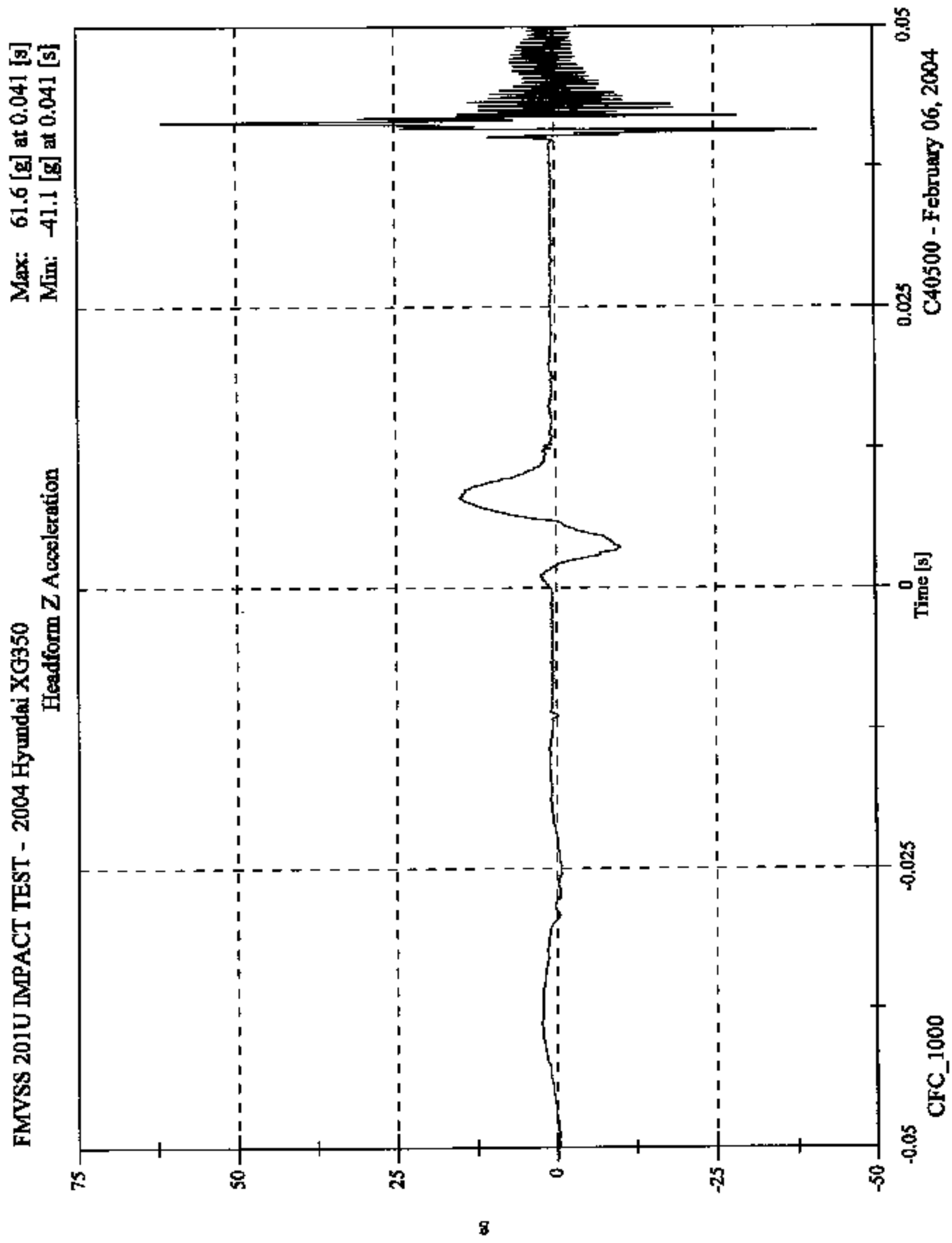
Min: 0.0 [g] at -0.058 [s]



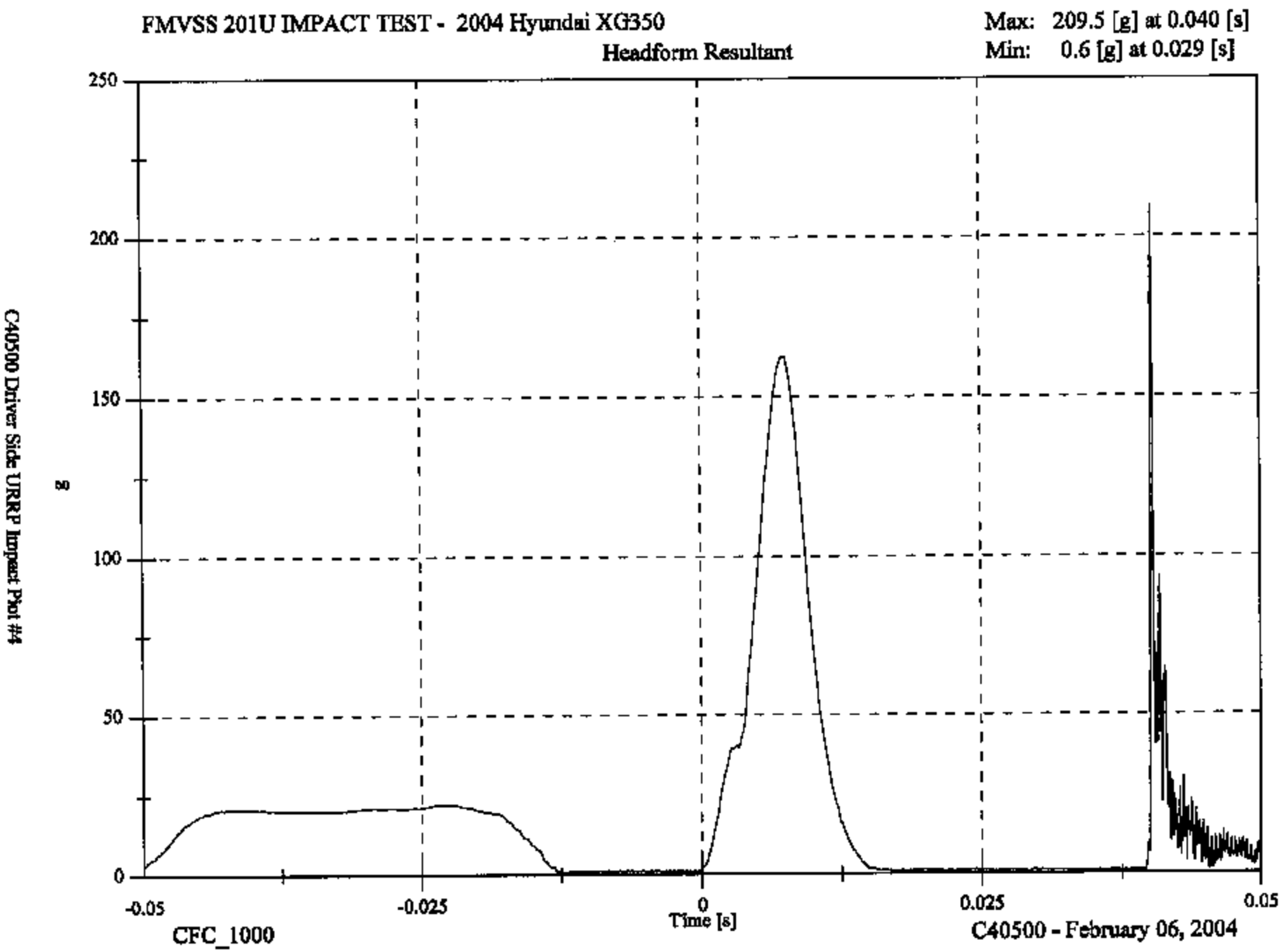

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 208.5 [g] at 0.040 [s]
Min: -161.3 [g] at 0.007 [s]
C40500 Driver Side URRP Impact Plot #1
g
250
200
150
100
50
0
-50
-100
-150
-200
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004



C40500 Driver Side URRP Impact Plot #2



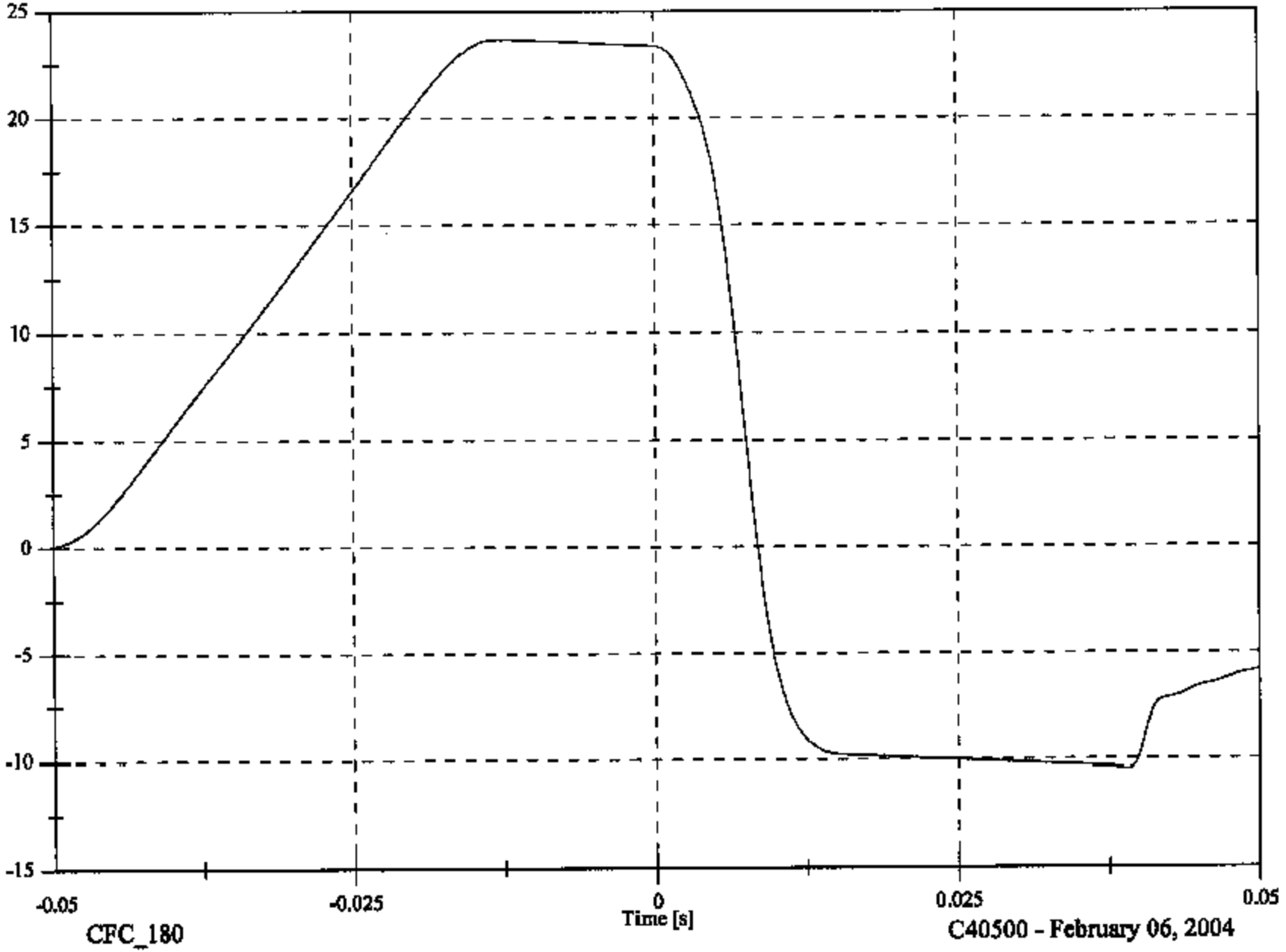
C40500 Driver Side URRP Impact Plot #3


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 209.5 [g] at 0.040 [s]
Min: 0.6 [g] at 0.029 [s]
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004
C40500 Driver Side URRP Impact Plot #4

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

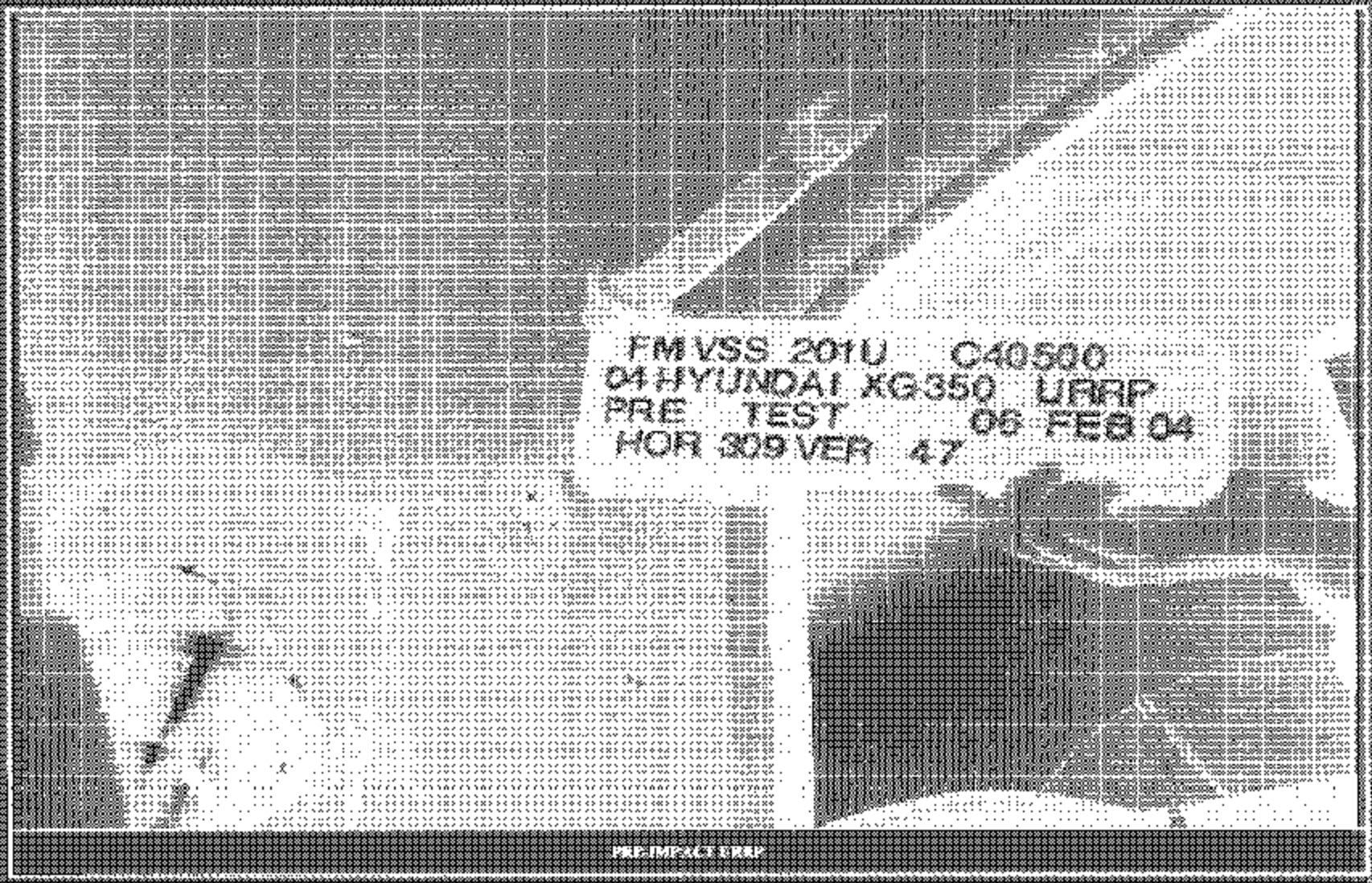
Max: 23.7 [KPH] at -0.013 [s]
Min: -10.4 [KPH] at 0.039 [s]



C40500 Driver Side URRP Impact Plot #5

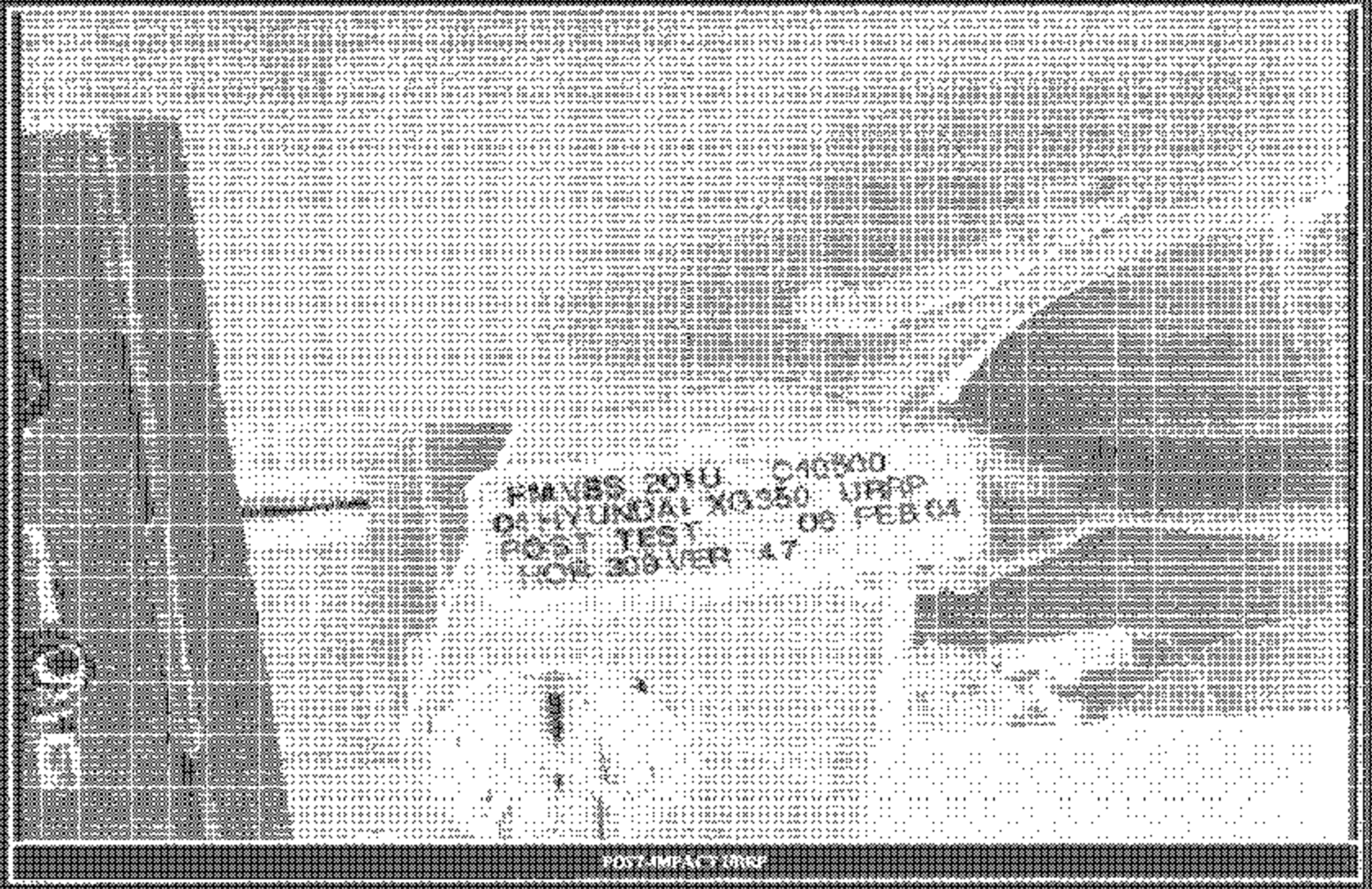
CFC_180

C40500 - February 06, 2004



PRE-IMPACT STAGE

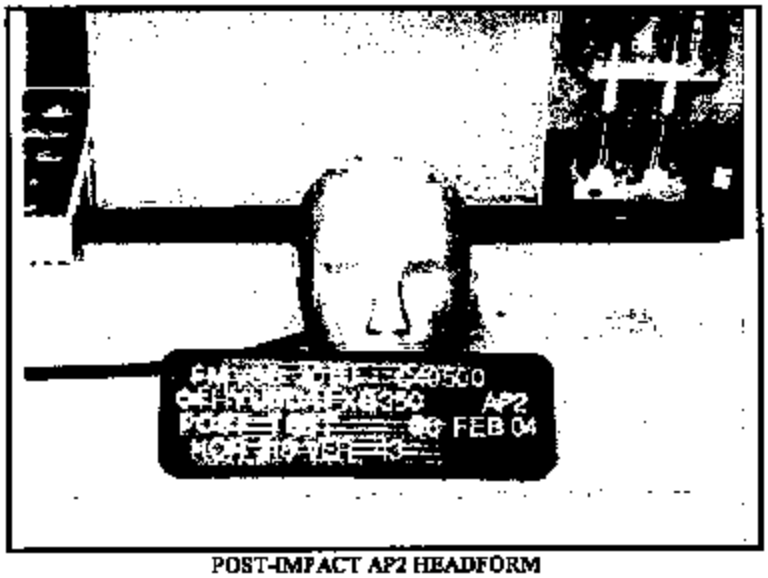
3710-05


FMVSS 201U C403030
OEM:HYUNDAI X03350 URRP
POST TEST 06 FEB 04
HIC# 306/VER 4.7
POST-IMPACT VIEW

VEHICLE YEAR/MAKE/MODEL/STYLE:	2004 Hyundai XG350 4-Door Sedan
VIN:	KMHFU45E04A273719
DATE OF MANUFACTURE:	March 6, 2003 (SEE CERTIFICATION LABEL)
COLOR:	Red (Bordeaux)

Test Number:	10
Test Date:	February 6, 2004
Target Location:	A-Pillar
Target Code:	AP2
Horizontal Impact Angle:	218°
Vertical Impact Angle:	43°
Ambient Temperature:	22°C
Relative Humidity:	20
Time of Impact:	11:15
Headform Number:	0642

Impact Point Description (from lower midpoint on midsagittal line)				
On Centerline	7	[x]	mm right	[ ] mm left
On Centerline	21		mm up	



POST-IMPACT AP2 HEADFORM

Free Motion HIC	496.2
HIC(d)	540.8
Impact Velocity (kph)	23.59
HIC T1 (msec)	1.6
HIC T2 (msec)	10.3

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350 C40500 - AP2

FMH Headform 0642

Test Date: February 06, 2004

Location: AP2

Work File: AP2

TEST RESULTS

Lab Temperature: 22 C

Lab Humidity: 20 %

Velocity at Impact: 23.59 KPH

Free Flight Distance: 215.74 mm

HICd: 540.8

HIC (36ms): 496.2

t1: 1.6 msec

t2: 10.3 msec

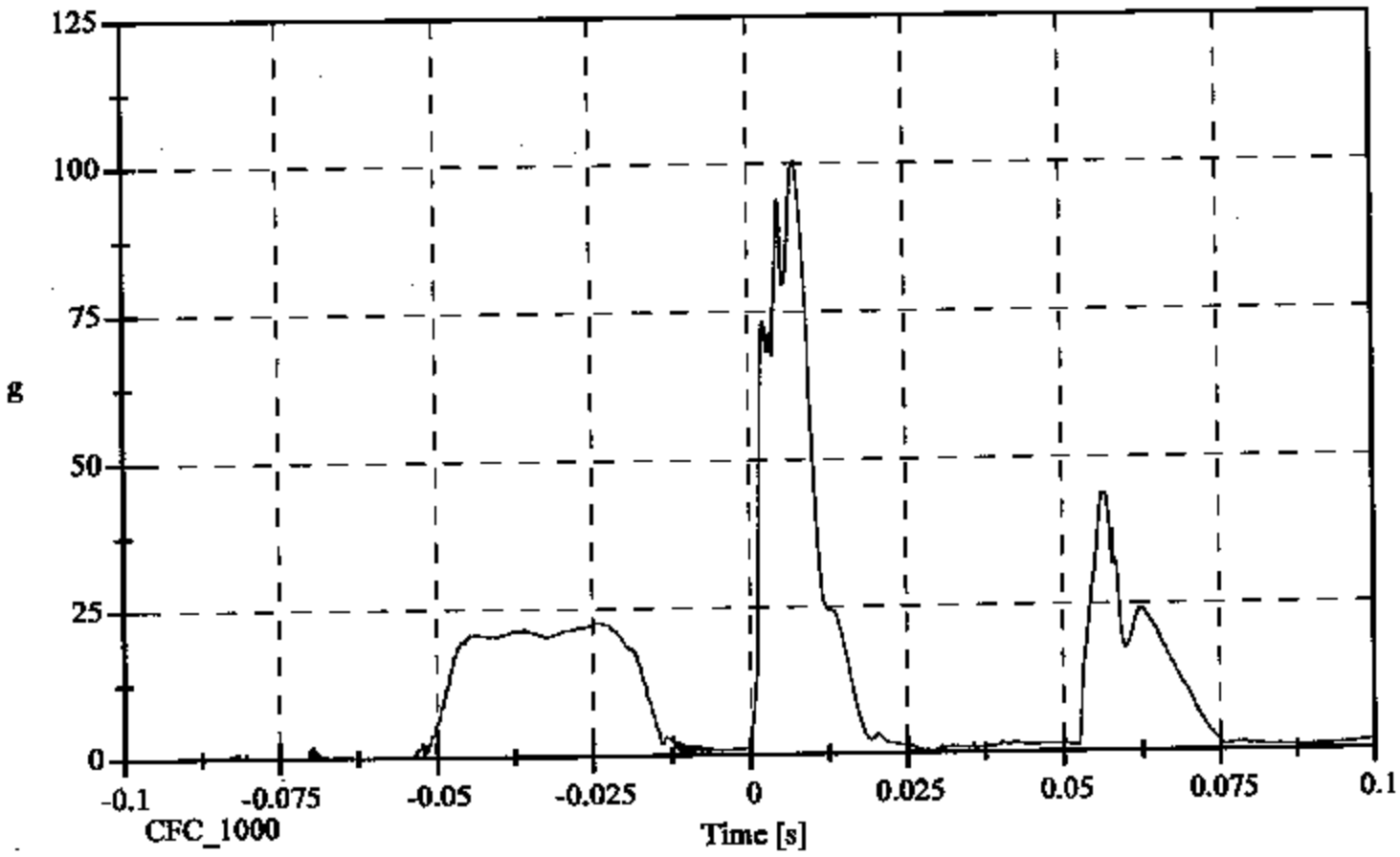
Duration: 8.6 msec

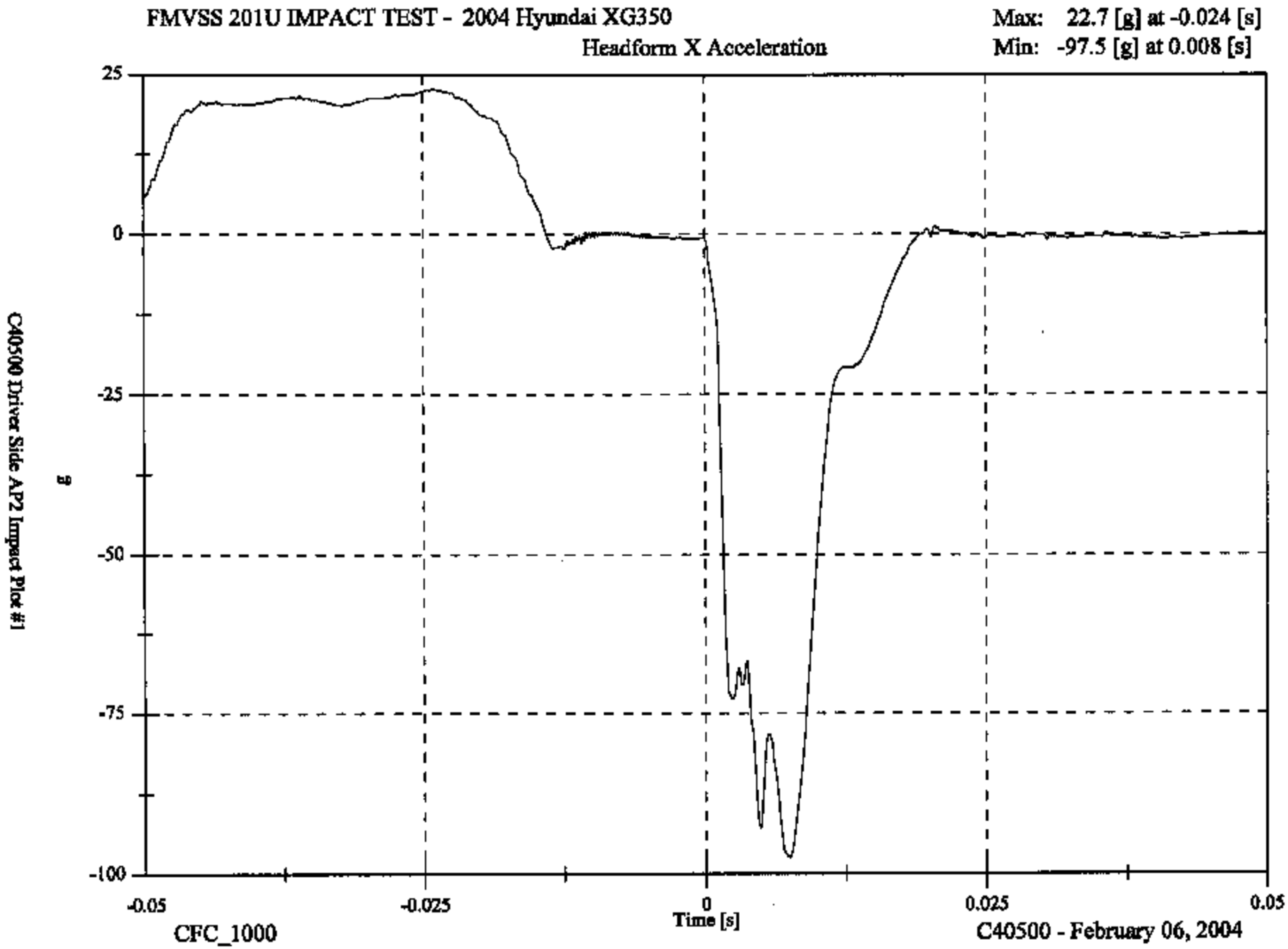
Average Acceleration: 10.4 g

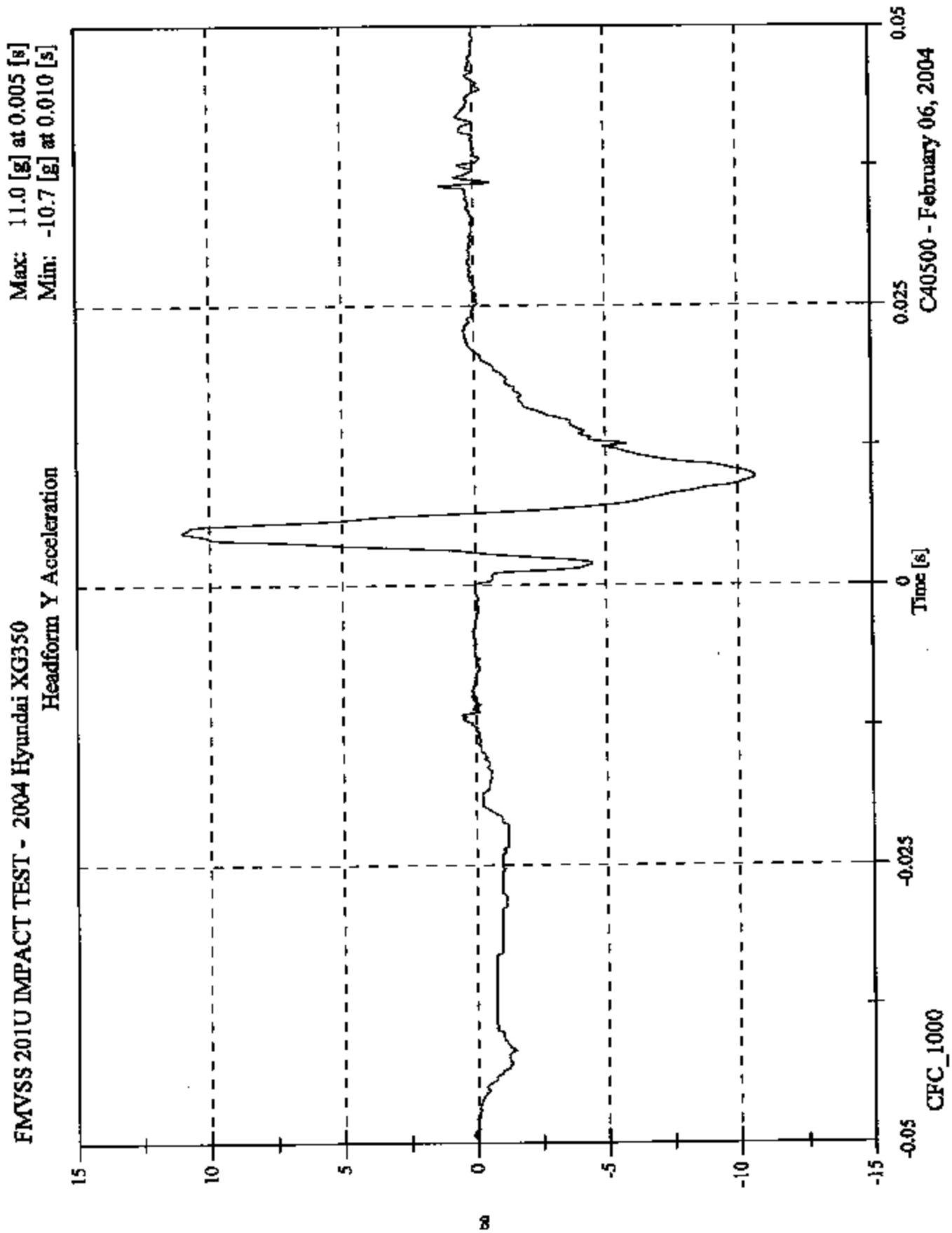
FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant

Max: 100.6 [g] at 0.008 [s]

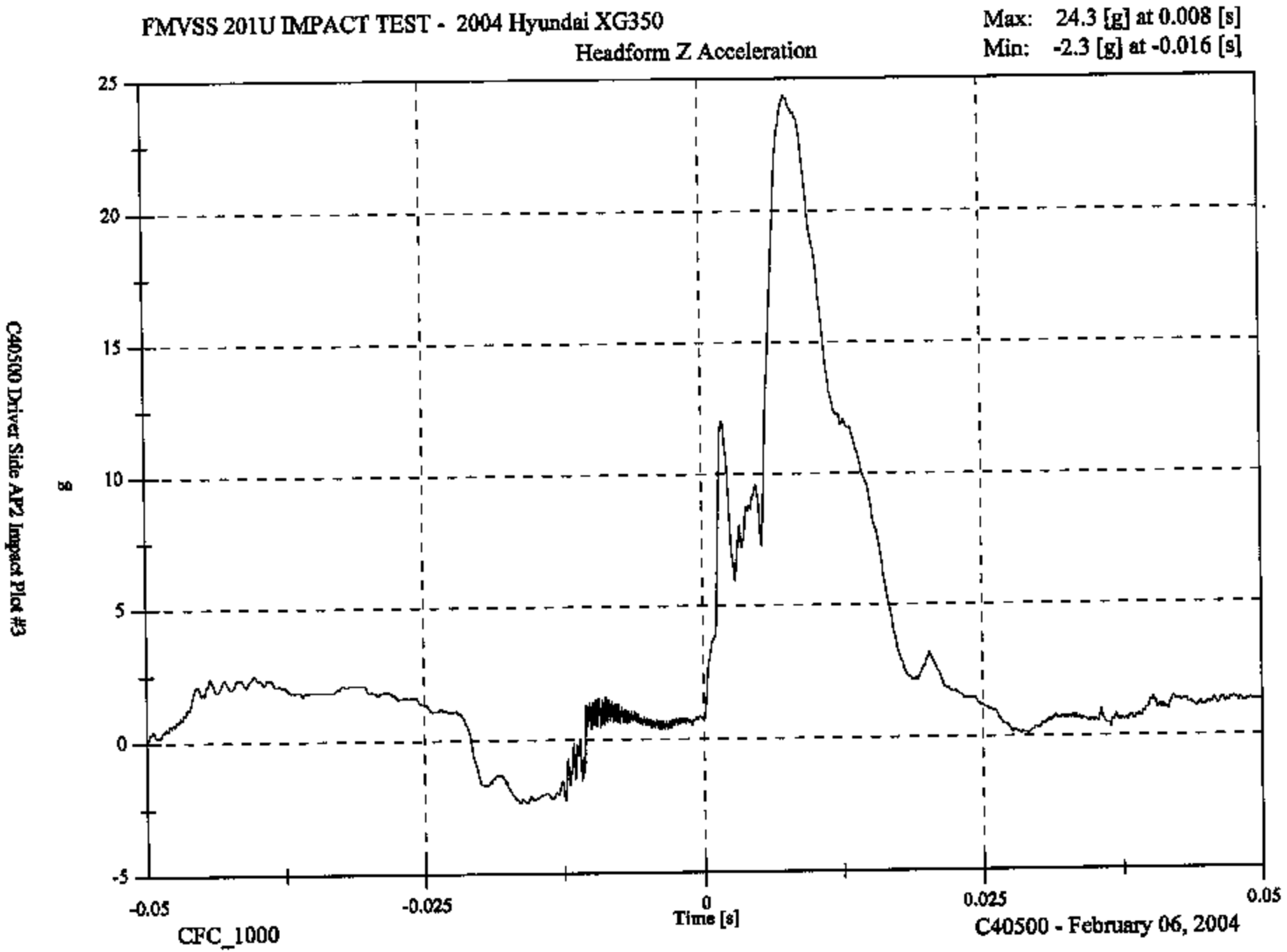
Min: 0.0 [g] at -0.090 [s]

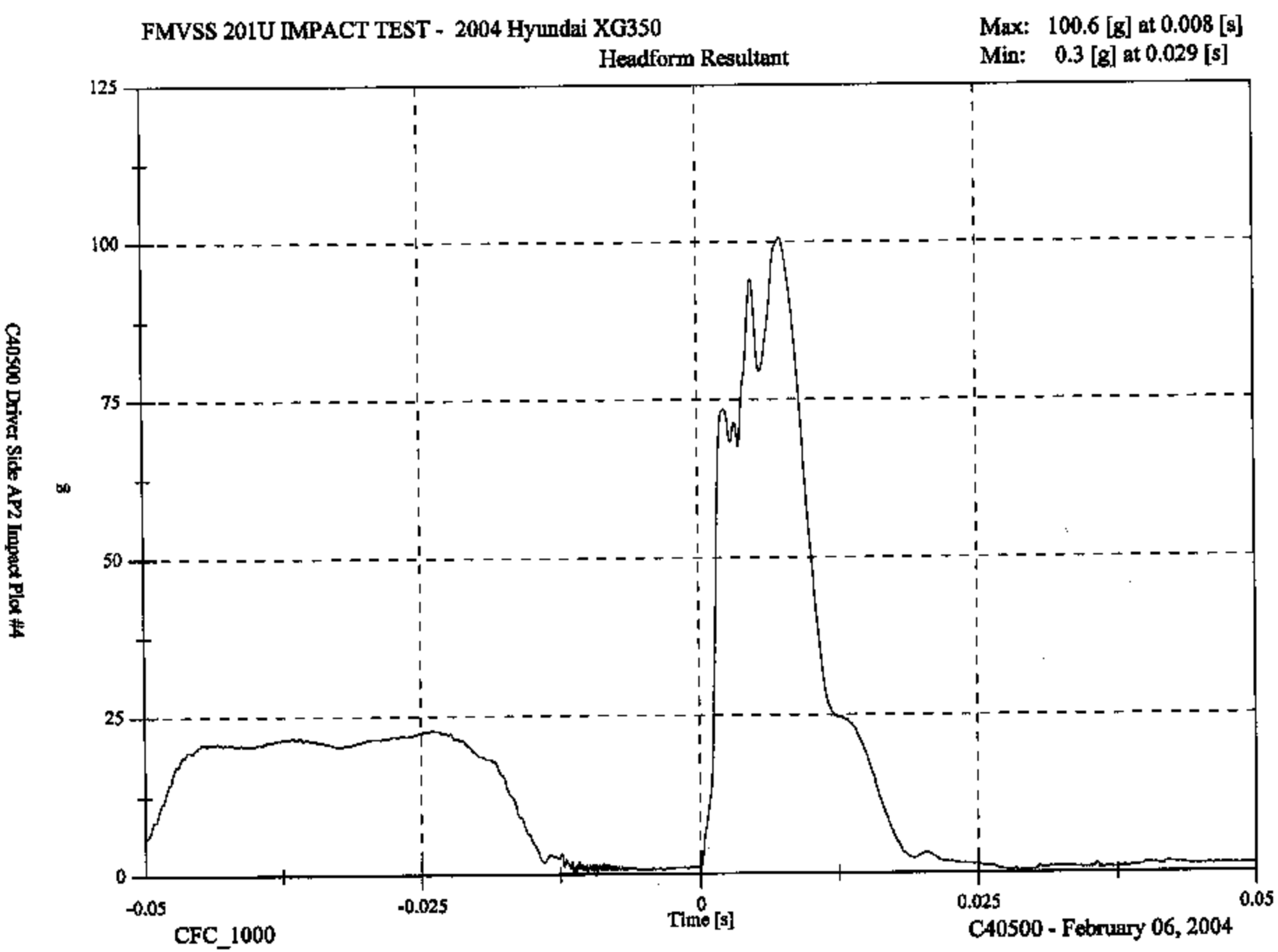



FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform X Acceleration
Max: 22.7 [g] at -0.024 [s]
Min: -97.5 [g] at 0.008 [s]
25
0
-25
-50
-75
-100
g
C40500 Driver Side AP2 Impact Plot #1
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004



C40500 Driver Side AP2 Impact Plot #2


FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Z Acceleration
Max: 24.3 [g] at 0.008 [s]
Min: -2.3 [g] at -0.016 [s]
25
20
15
10
5
0
-5
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004
C40500 Driver Side AP2 Impact Plot #3

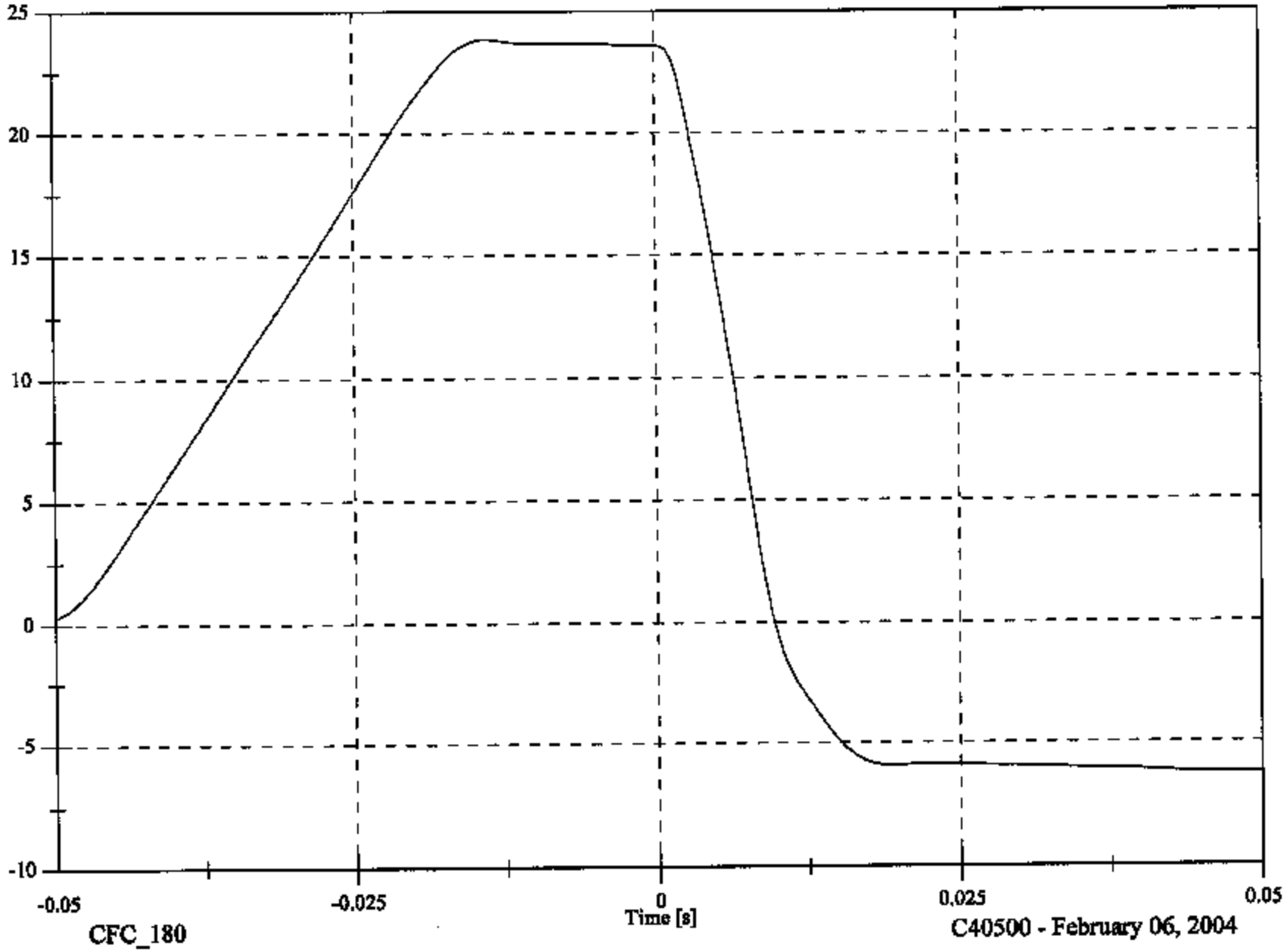

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350
Headform Resultant
Max: 100.6 [g] at 0.008 [s]
Min: 0.3 [g] at 0.029 [s]
125
100
75
50
25
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 06, 2004
C40500 Driver Side AP2 Impact Plot #4

FMVSS 201U IMPACT TEST - 2004 Hyundai XG350

Headform Velocity

Max: 23.9 [KPH] at -0.014 [s]

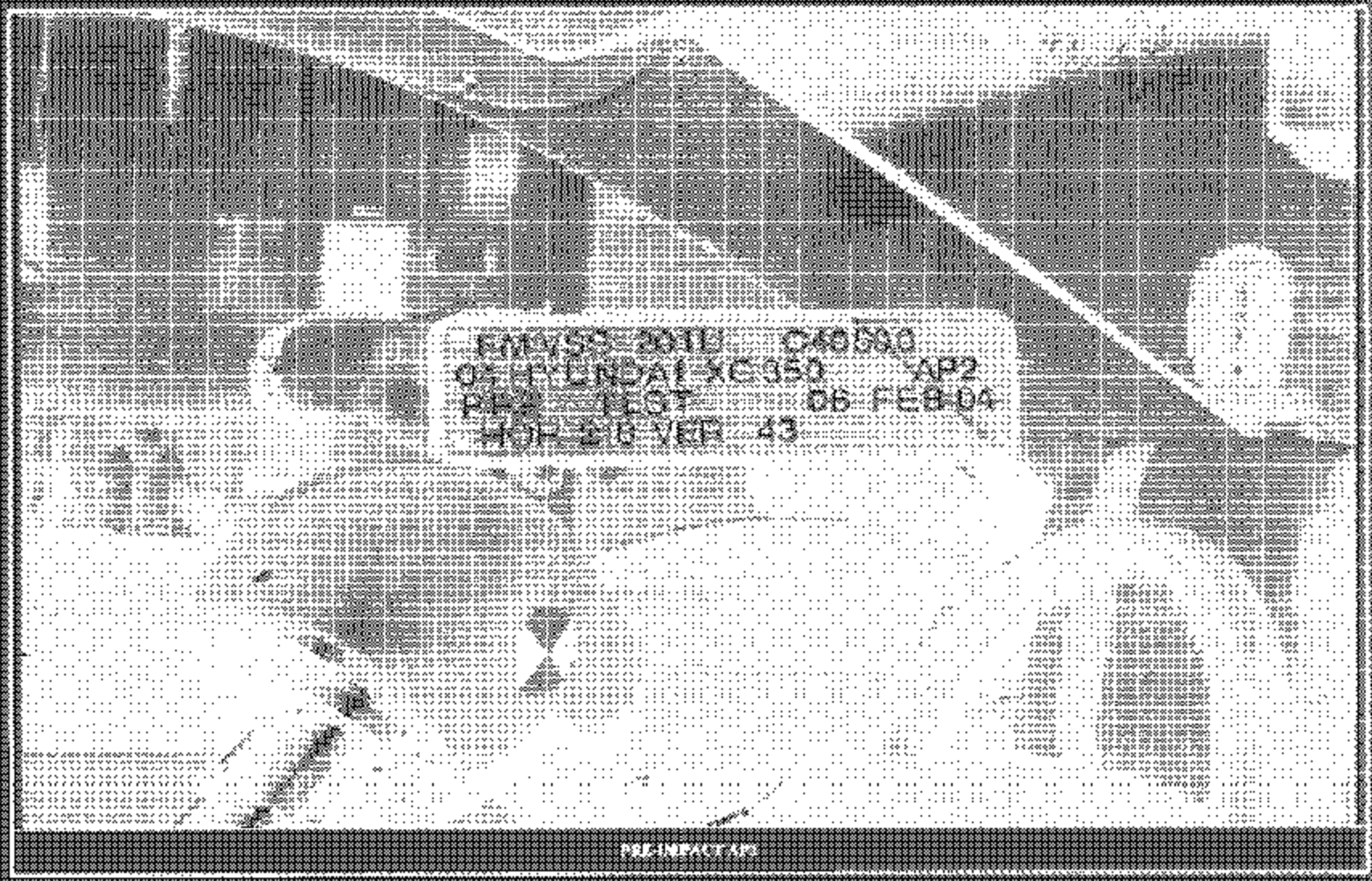
Min: -6.3 [KPH] at 0.050 [s]



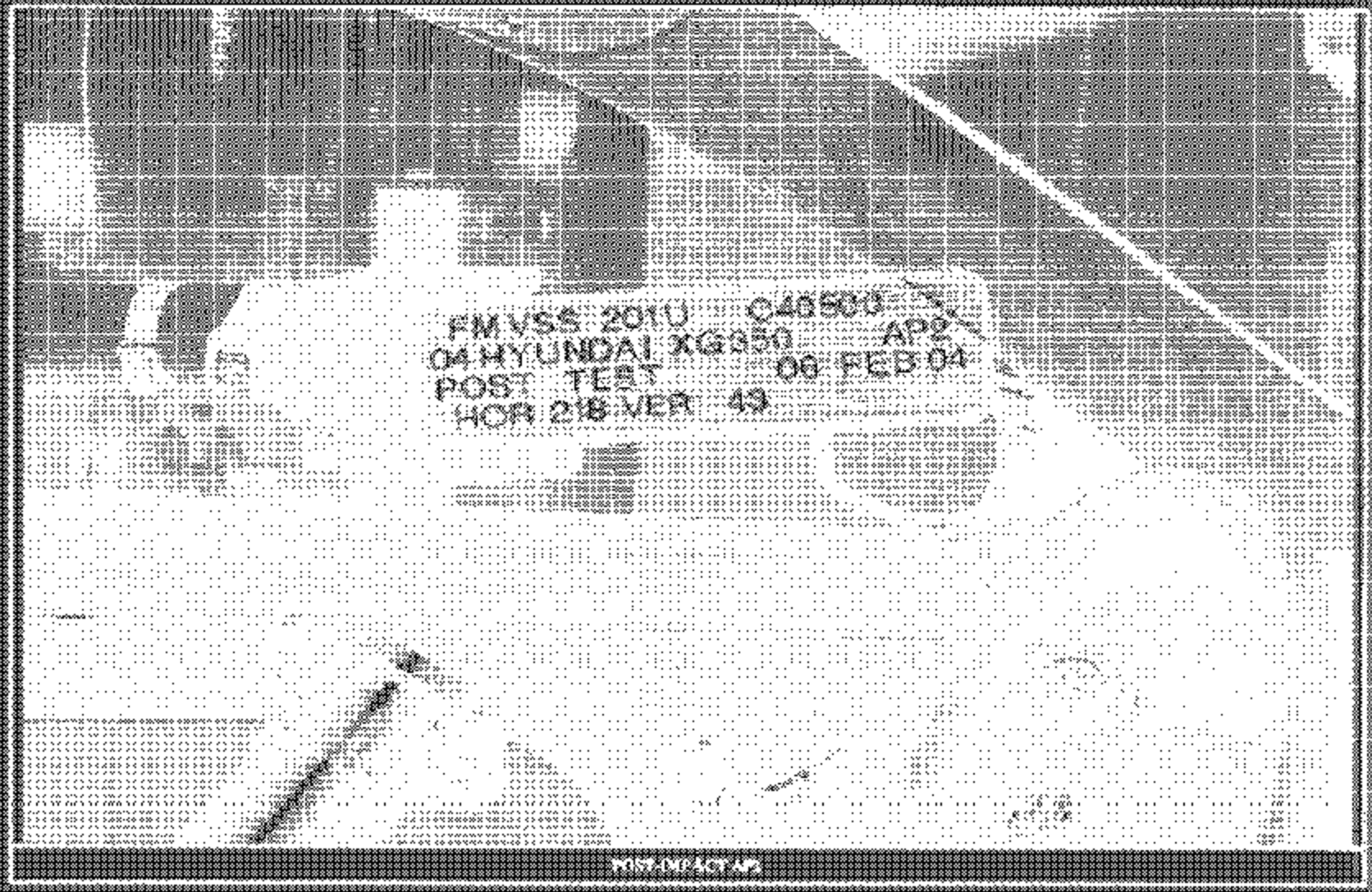
C40500 Driver Side AP2 Impact Plot #5

CFC_180

C40500 - February 06, 2004



PRE-IMPACT AIR


FMVSS 201U C46503
04 HYUNDAI XG350 AP2
POST TEST 06 FEB 04
HOR 218 VERT 49
POST-IMPACT AP2

APPENDIX A

PHOTOGRAPHS

PHOTOGRAPHS

FIGURE	VIEW
A-1	LEFT SIDE VIEW OF VEHICLE
A-2	RIGHT SIDE VIEW OF VEHICLE
A-3	3/4 FRONTAL VIEW FROM LEFT SIDE OF VEHICLE
A-4	3/4 REAR VIEW FROM RIGHT SIDE OF VEHICLE
A-5	VEHICLE'S CERTIFICATION LABEL
A-6	VEHICLE'S TIRE INFORMATION LABEL
A-7	PRE-TEST DRIVER SIDE A-PILLAR
A-8	PRE-TEST DRIVER SIDE FRONT HEADER
A-9	PRE-TEST DRIVER SIDE SIDE RAIL
A-10	PRE-TEST DRIVER SIDE B-PILLAR
A-11	PRE-TEST DRIVER SIDE REAR PILLAR
A-12	PRE-TEST PASSENGER SIDE A-PILLAR
A-13	PRE-TEST PASSENGER SIDE FRONT HEADER
A-14	PRE-TEST PASSENGER SIDE SIDE RAIL
A-15	PRE-TEST PASSENGER SIDE B-PILLAR
A-16	PRE-TEST PASSENGER SIDE REAR PILLAR
A-17	POST-TEST DRIVER SIDE A-PILLAR
A-18	POST-TEST DRIVER FRONT HEADER
A-19	POST-TEST DRIVER SIDE SIDE RAIL
A-20	POST-TEST DRIVER SIDE B-PILLAR
A-21	POST-TEST DRIVER SIDE REAR PILLAR
A-22	POST-TEST PASSENGER SIDE A-PILLAR
A-23	POST-TEST PASSENGER FRONT HEADER
A-24	POST-TEST PASSENGER SIDE SIDE RAIL
A-25	POST-TEST PASSENGER SIDE B-PILLAR
A-26	POST-TEST PASSENGER SIDE REAR PILLAR

Figure A-1 : LEFT SIDE VIEW OF VEHICLE

Figure A-2 RIGHT SIDE VIEW OF VEHICLE

Figure A-3 - 39 FRONTAL VIEW FROM LEFT SIDE OF VEHICLE

Figure A-4 3/4 REAR VIEW FROM RIGHT SIDE OF VEHICLE

Figure A.5 - VEHICLE'S CERTIFICATION LABEL

Figure 4.6 : VEHICLE'S TIRE INFORMATION LABEL

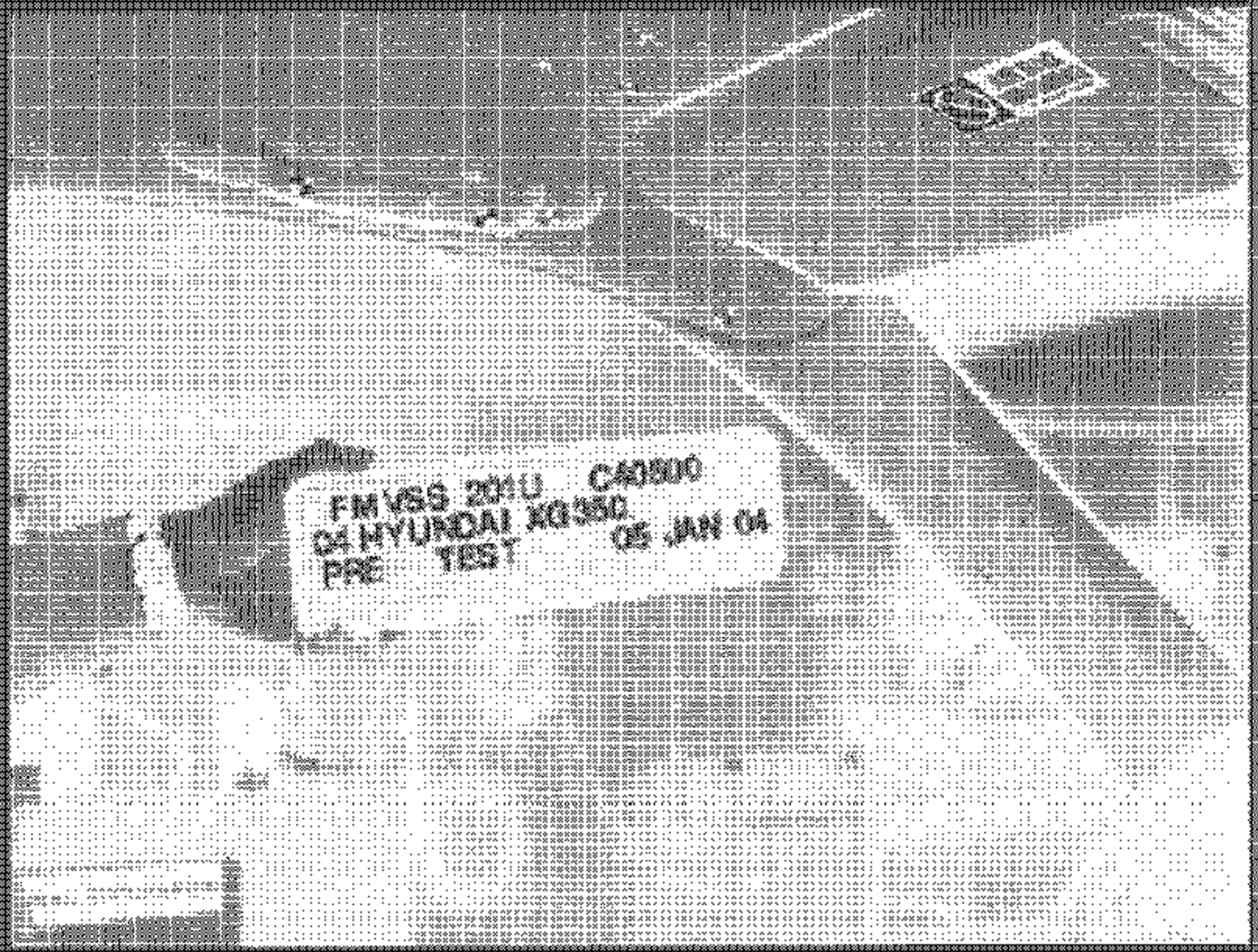


Figure A-2 | PRE-TEST DRIVER SIDE A-PILLAR

Figure A-8 PRE-TEST DRIVER SIDE FRONT HEADER

FIGURE A-9. PRE-TEST DRIVER SIDE SIDE RAIL

Figure A-10: PRE-TEST DRIVER SIDE B-PILLAR

Figure A-11 - PRE-TEST DRIVER SIDE REAR PILLAR

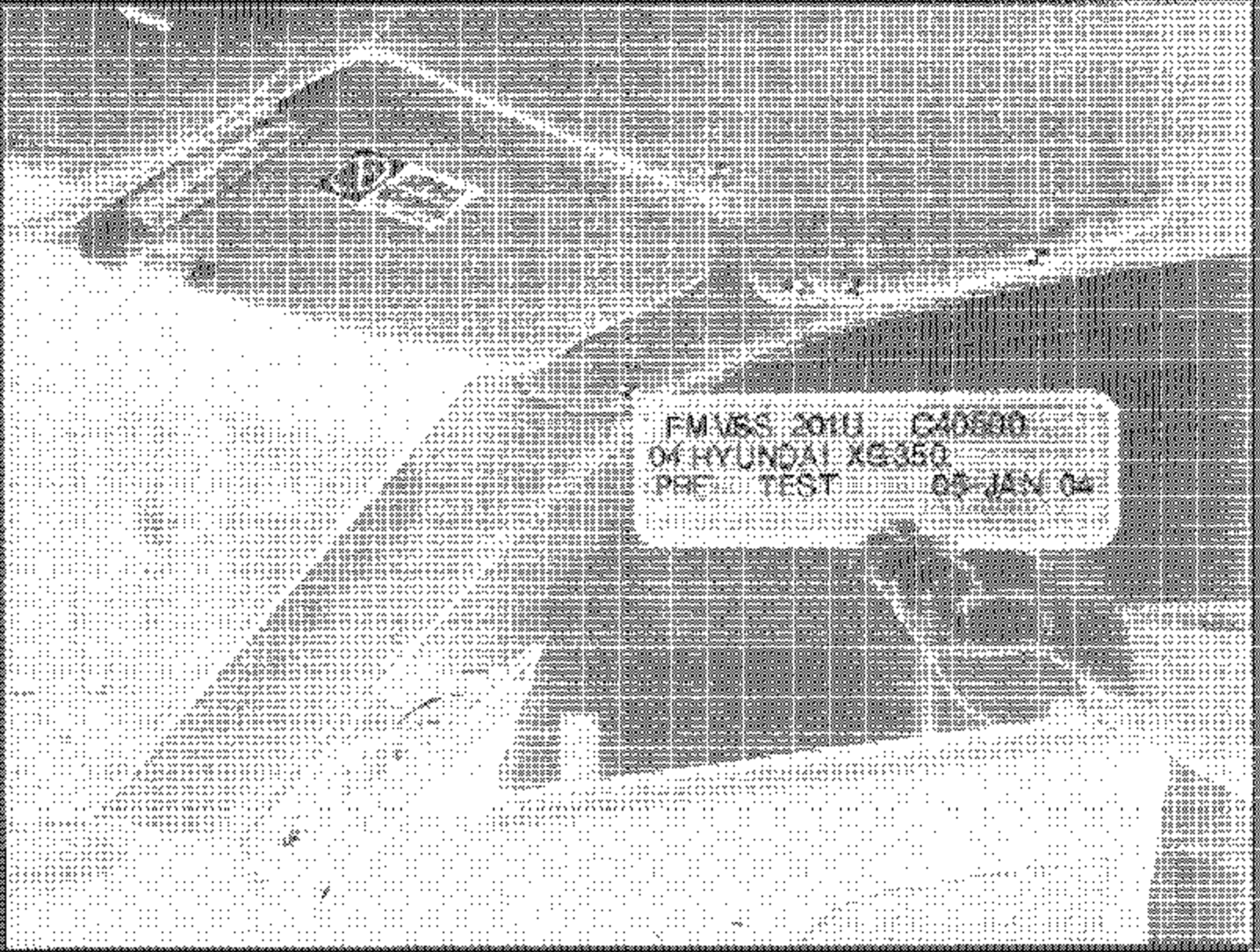


Figure A-12 PRE-TEST PASSENGER SIDE A-PILLAR

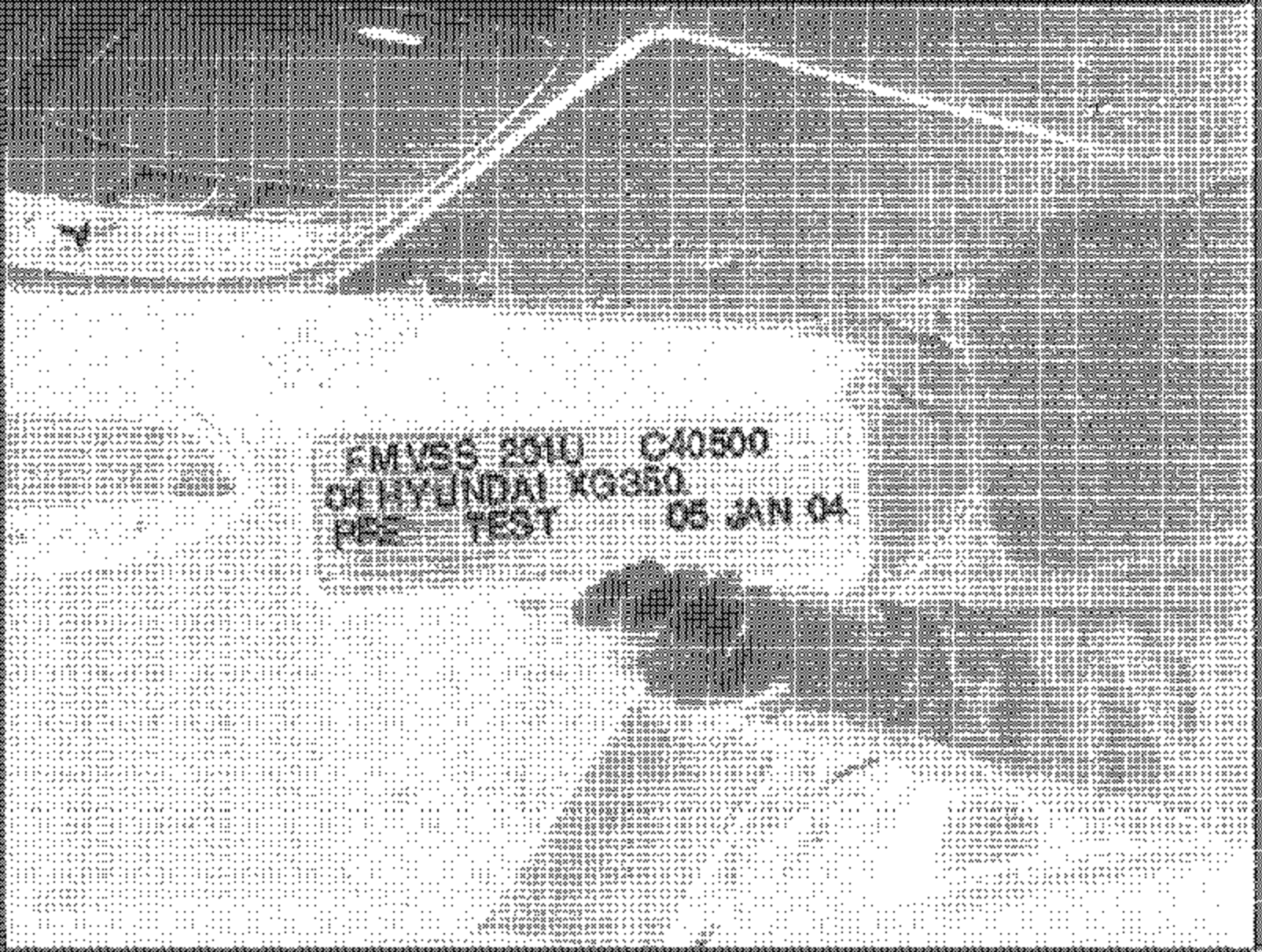


Figure A-13 PRE-TEST PASSENGER SIDE FRONT HEADER

Figure A-14 - PRE-TEST PASSENGER SIDE SIDE RAIL

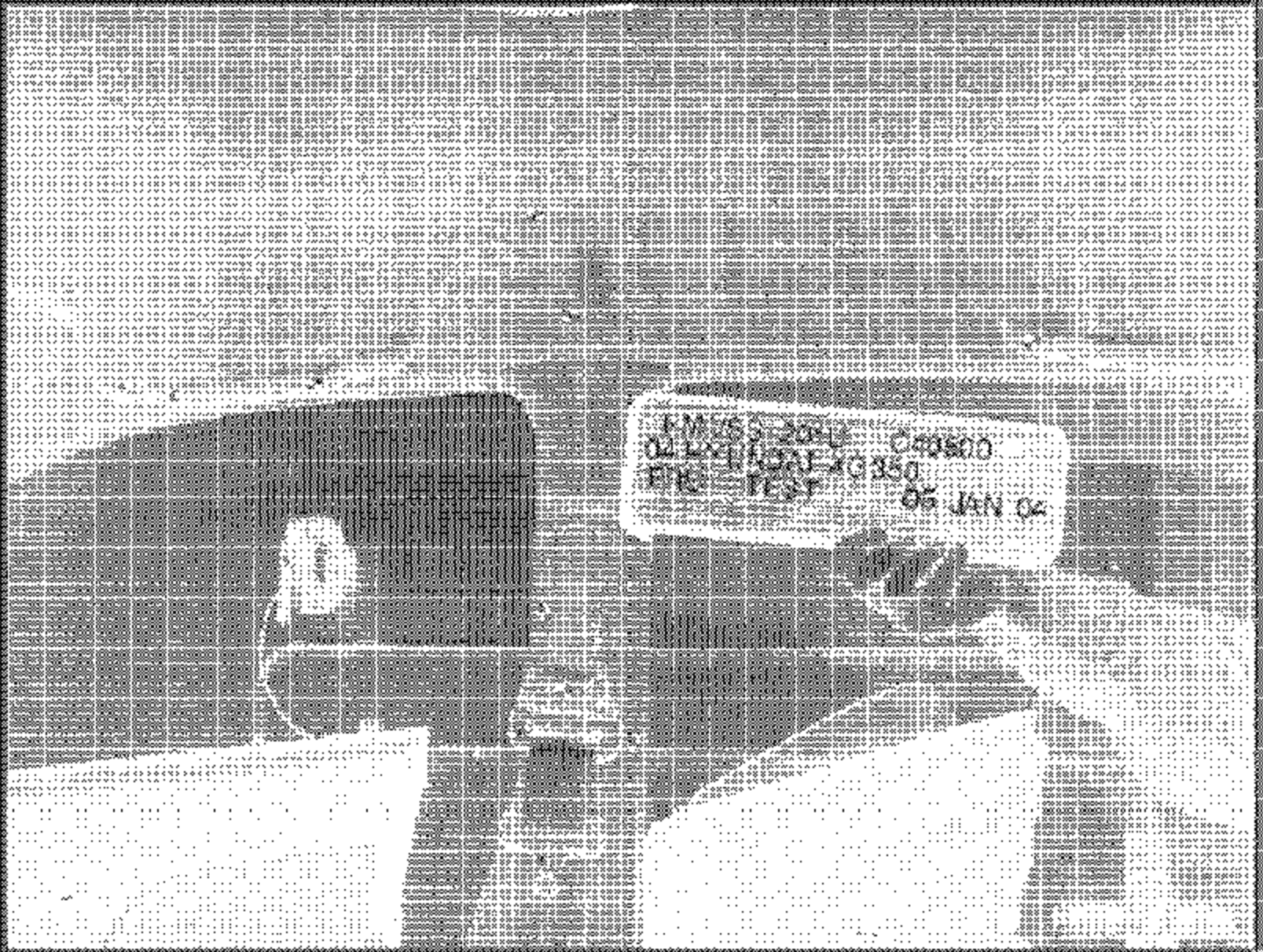


Figure A-15 : PRE-TEST PASSENGER SIDE B-PILLAR

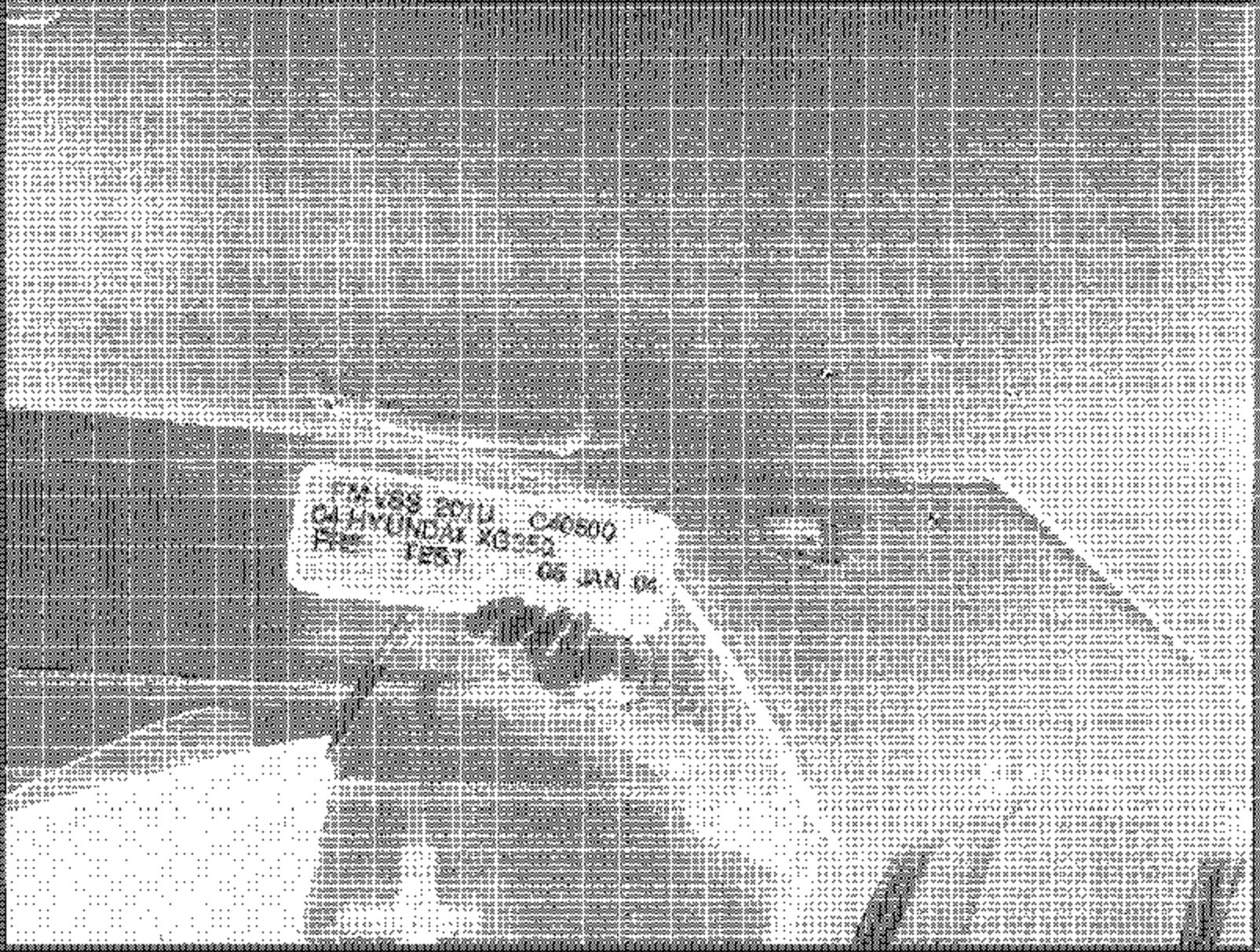


Figure A-76 : PRE-TEST PASSENGER SIDE REAR PILLAR

Figure A-17: POST-TEST DRIVER SIDE A-PILLAR

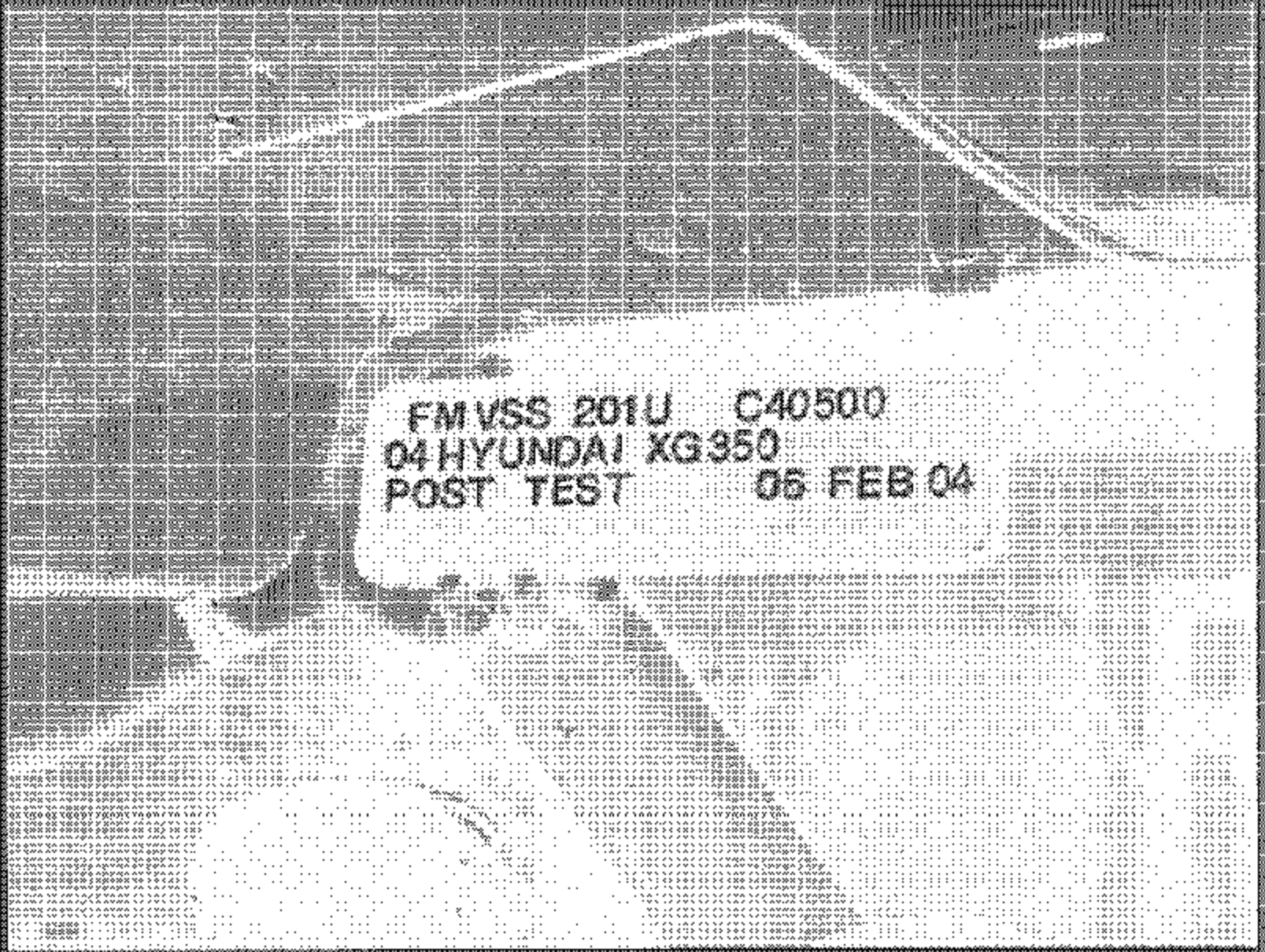


Figure A-19 : POST-TEST DRIVER SIDE FRONT HEADER

Figure A-19 POST-TEST DRIVER SIDE SIDE RAIL

Figure A-30: POST-TEST DRIVER SIDE B-PILLAR

Figure A-21 POST-TEST DRIVER SIDE REAR PILLAR

Figure A.22 – POST-TEST PASSENGER SIDE A-PILLAR

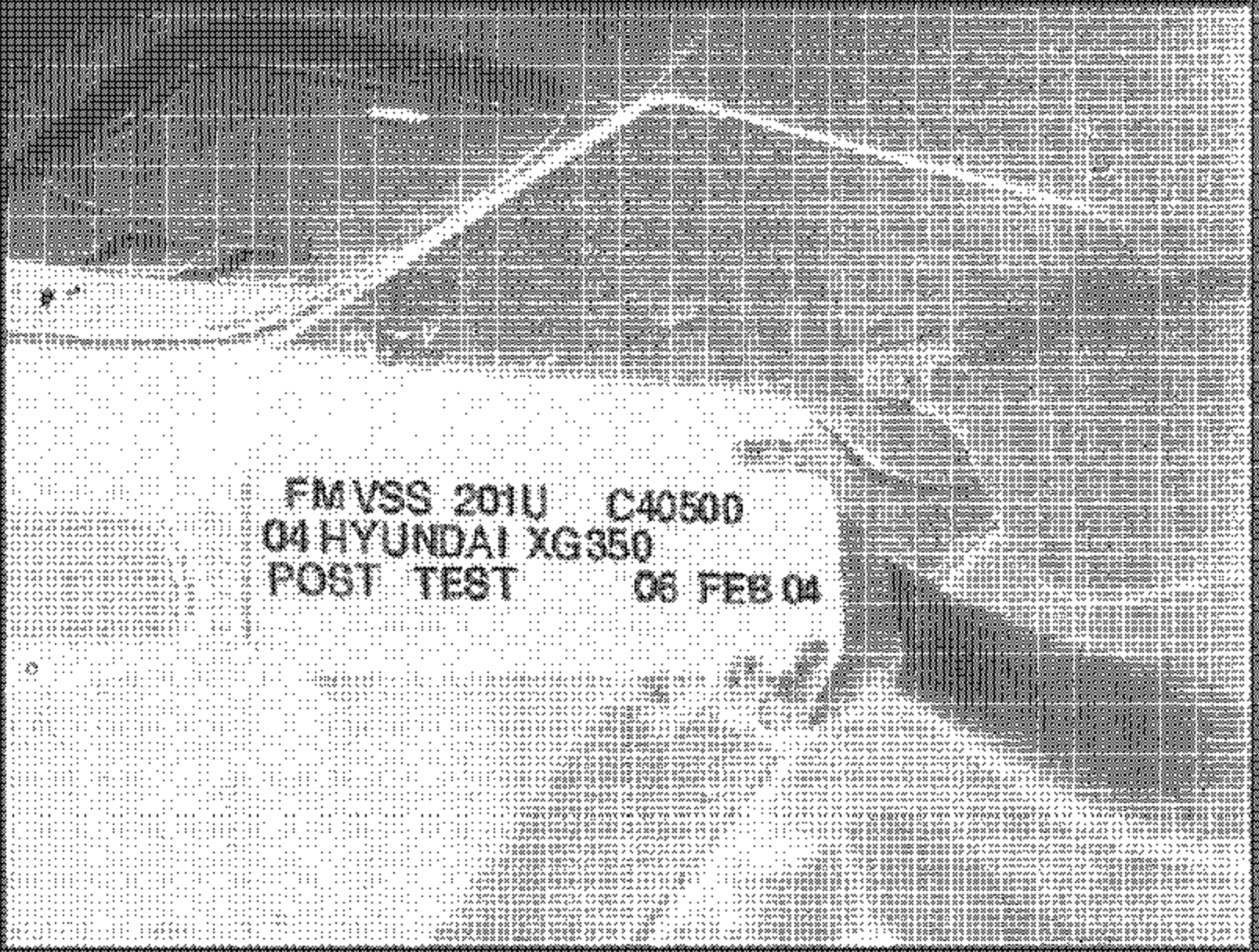


Figure A-23 - POST-TEST PASSENGER SIDE FRONT HEADER

Figure A-24 POST TEST PASSENGER SIDE MDB RAIL

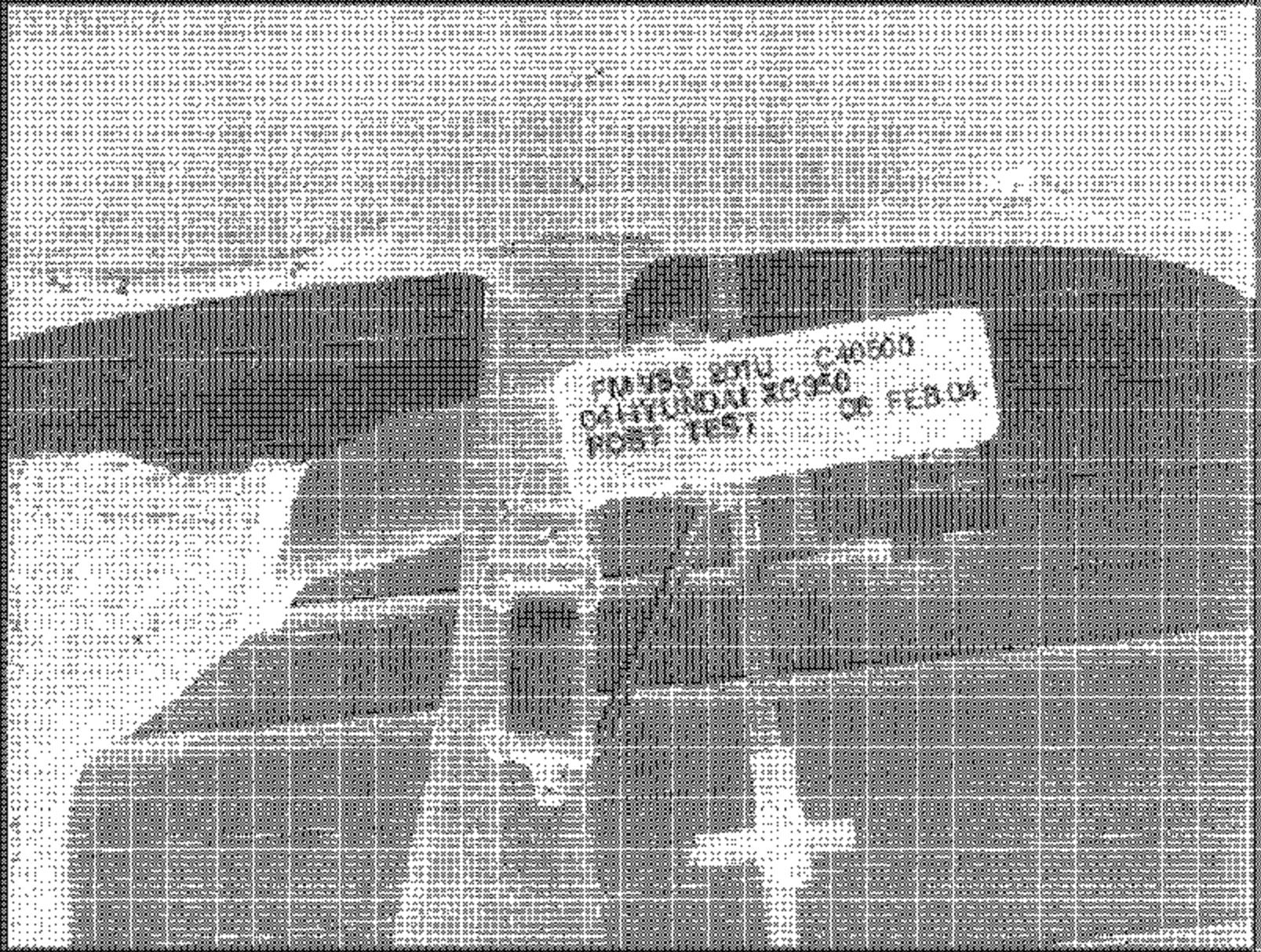


Figure A-23 – POST-TEST PASSENGER SIDE B-PILLAR

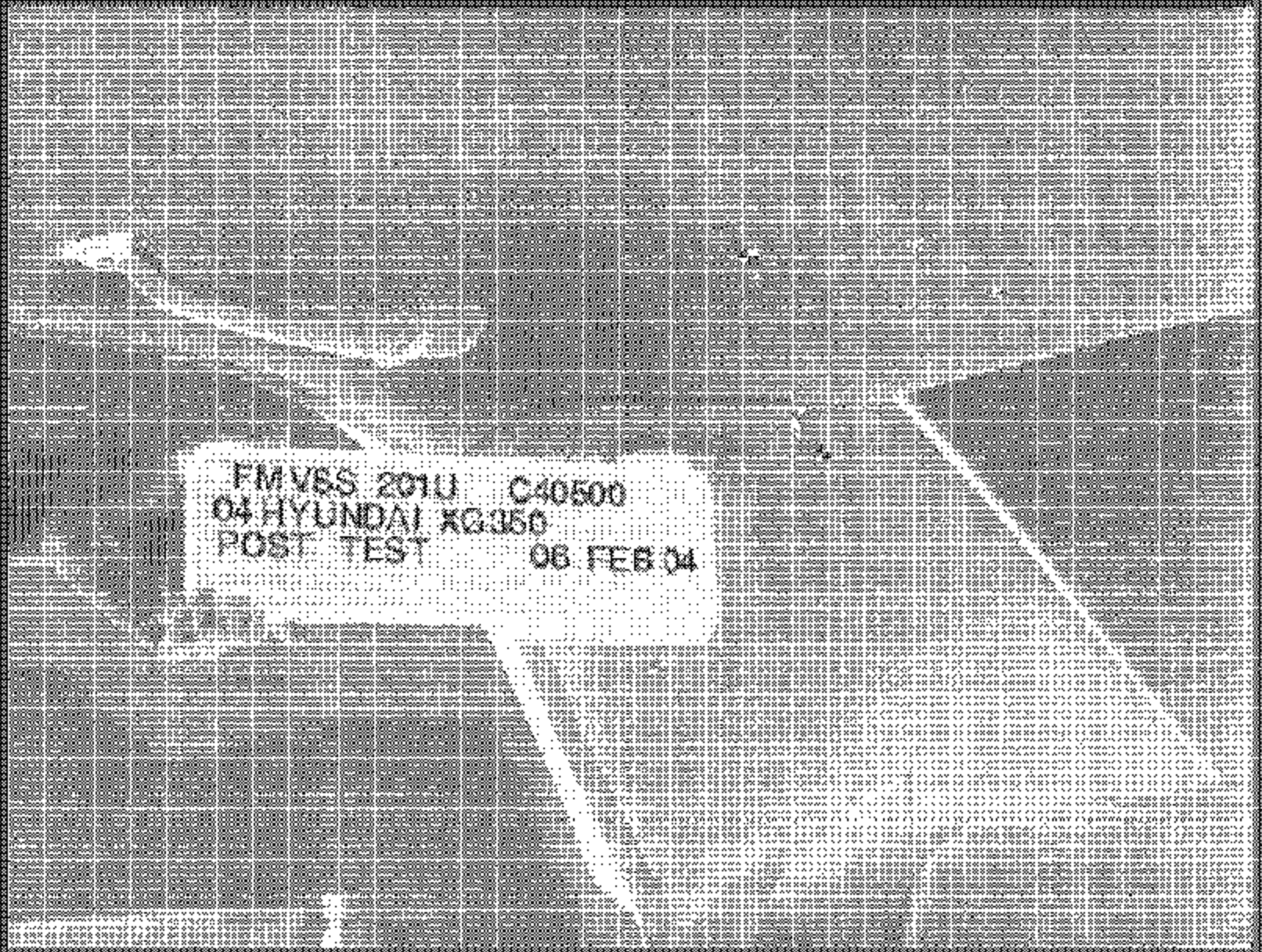


Figure A-26: POST-TEST PASSENGER SIDE REAR PILLAR

APPENDIX B

PART 572L PERFORMANCE CALIBRATION IN SUPPORT OF VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT PROTECTION IN INTERIOR IMPACT

Appendix B contains the results from certification tests performed on the Free Motion Headforms utilized in this test program. The results indicate that the headforms meet all of the performance specifications given in 49 CFR Part 572 Subpart L.

The tests were conducted at the Dummy Certification Test Facility of Veridian Engineering. A summary of the test results are included in this Appendix.

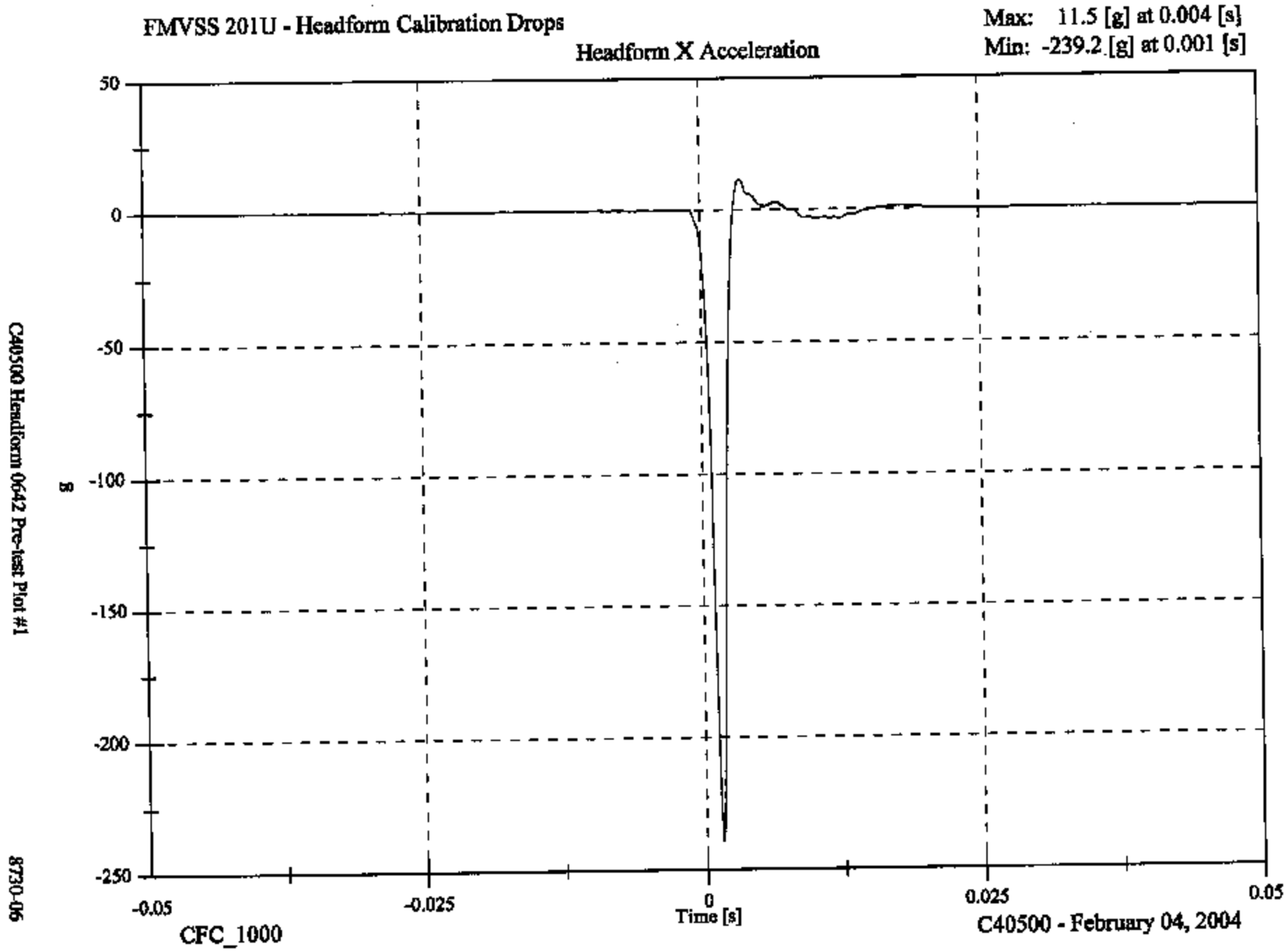
PART 572L
HEAD DROP PRE-TEST

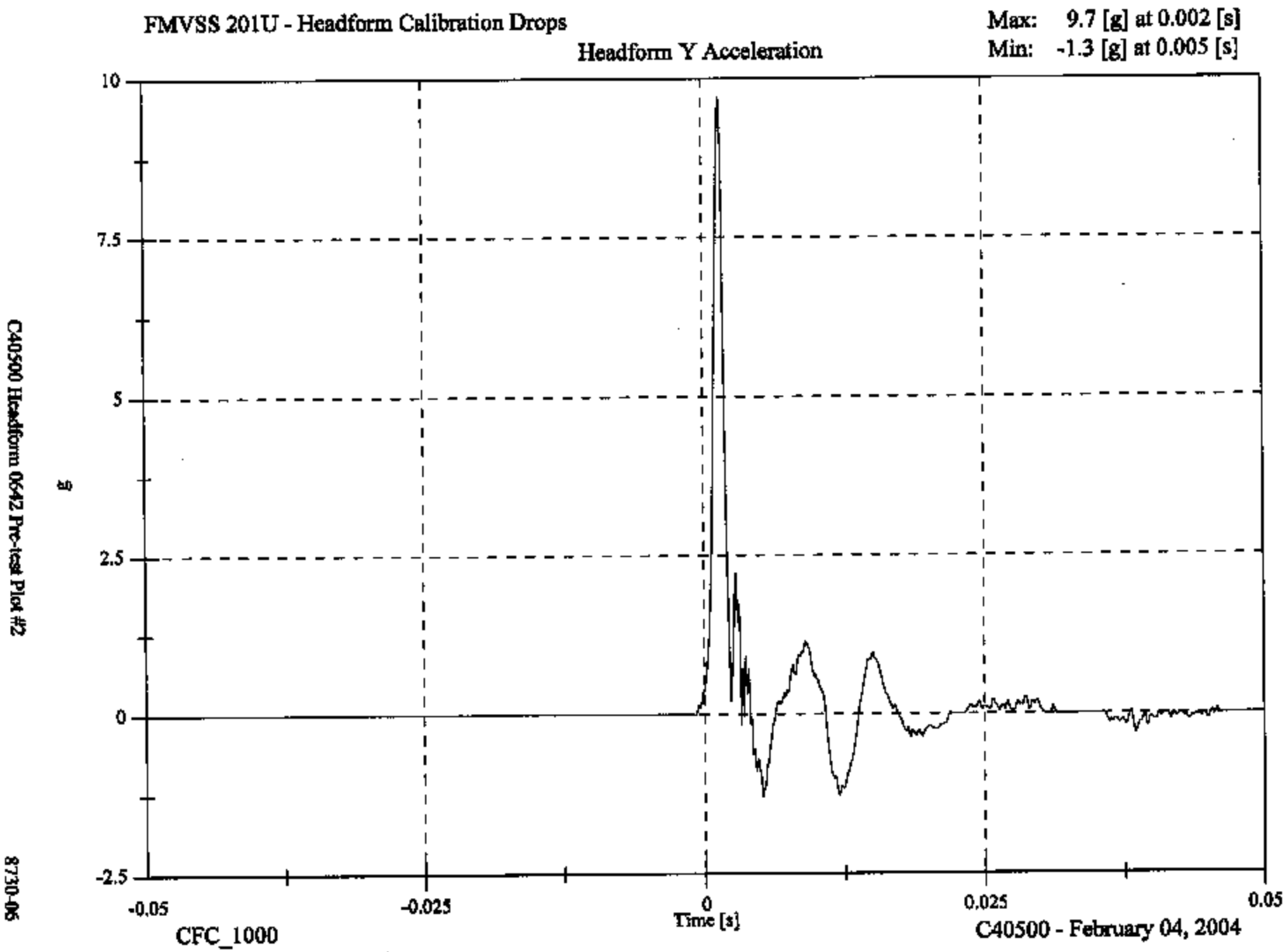
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**	
SERIAL NUMBER:	**0642**	
CALIBRATION DATE:	**February 4, 2004**	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	**19°C to 26°C**	**23**
RELATIVE HUMIDITY	**10% to 70%**	**16**
PEAK RESULTANT ACCELERATION	**225 Gs to 275 Gs**	**269.8**
PEAK LATERAL ACCELERATION	**15 Gs Maximum**	**9.7**
IS ACCELERATION CURVE UNIMODAL?	**YES**	**YES**

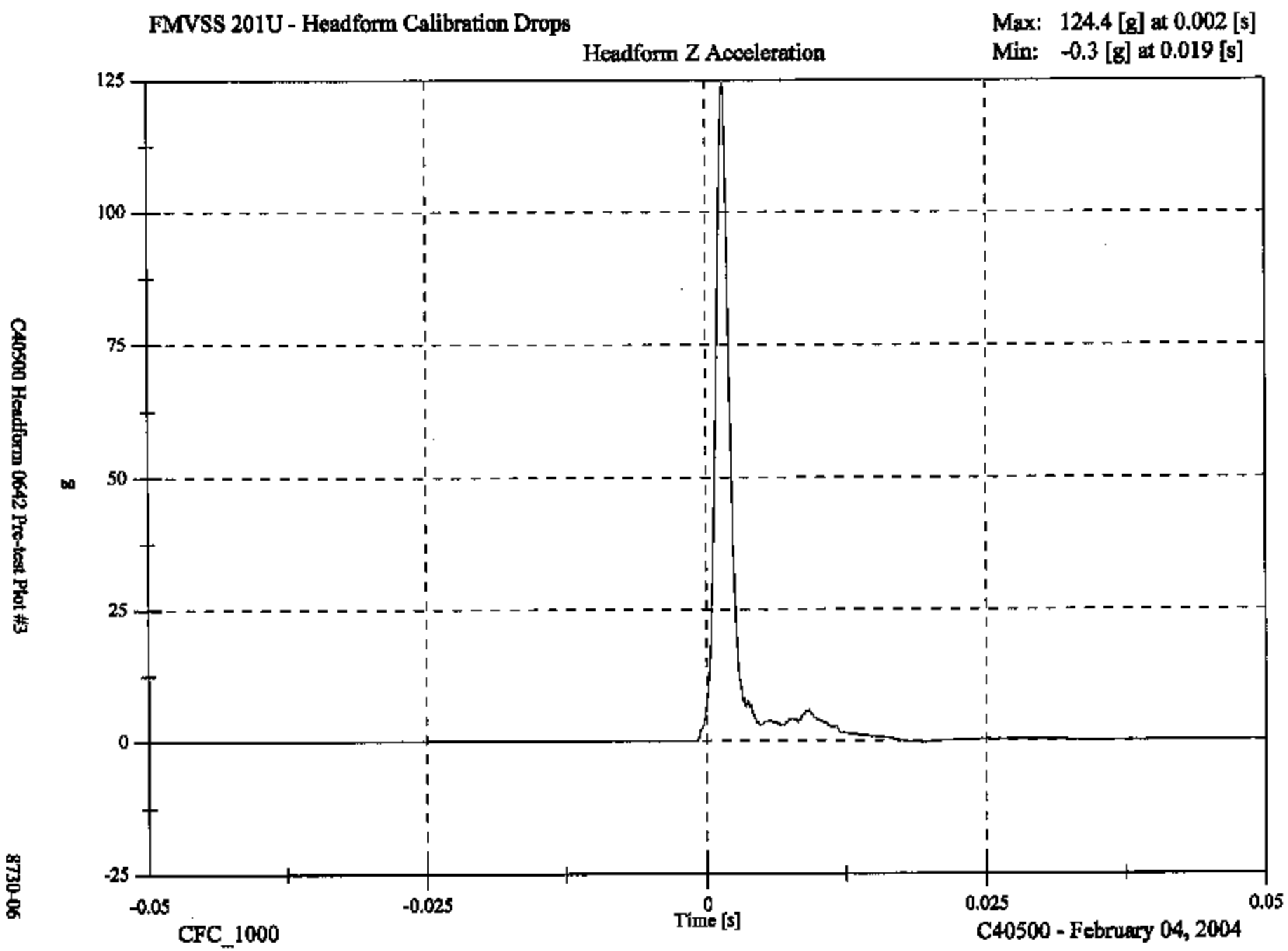
HEAD ACCELEROMETER CALIBRATION INFORMATION

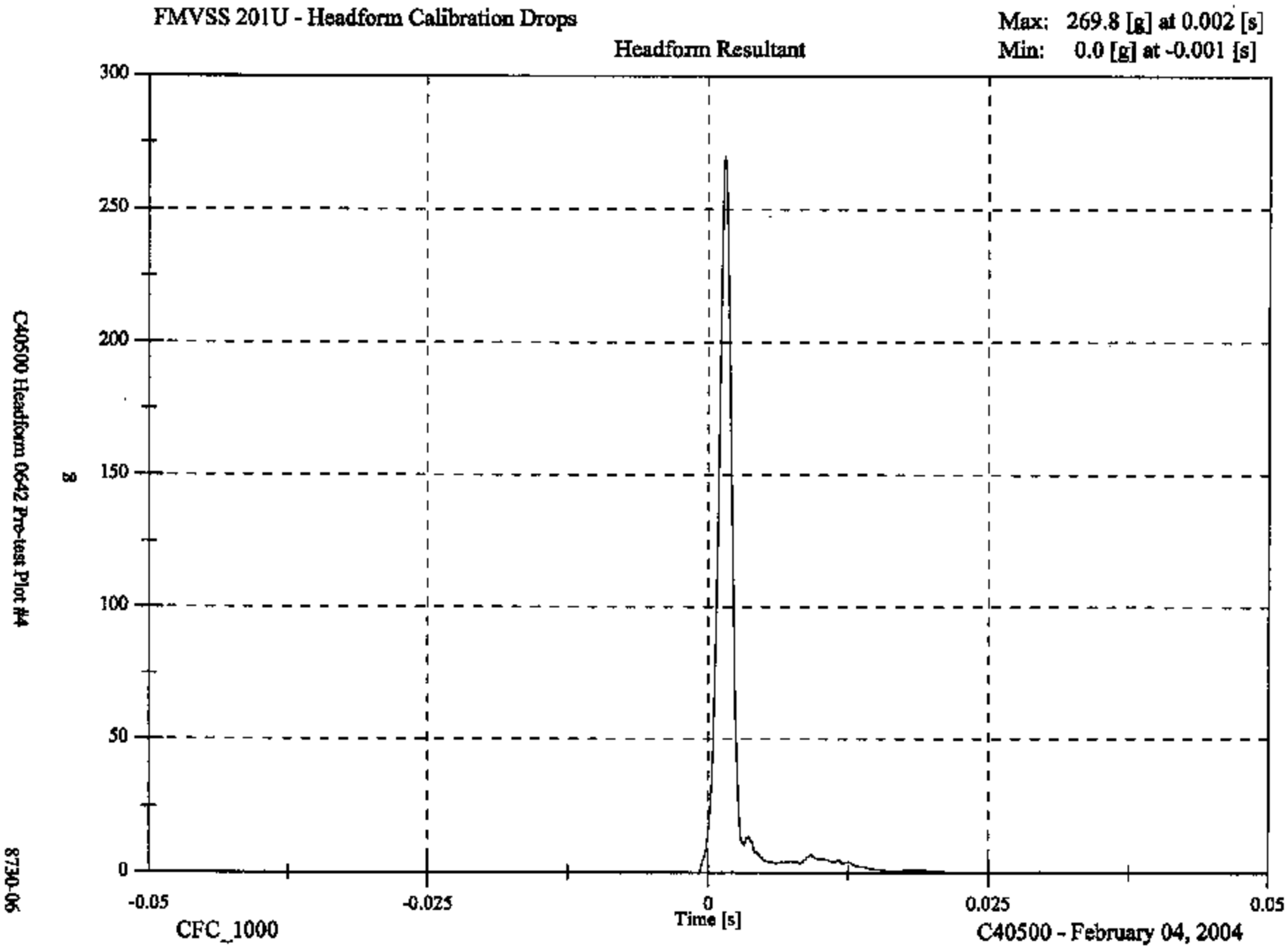
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J24876	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J33038	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J31009	08/22/03	02/23/04

REMARKS:


FMVSS 201U - Headform Calibration Drops
Headform X Acceleration
Max: 11.5 [g] at 0.004 [s]
Min: -239.2 [g] at 0.001 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0642 Pre-test Plot #1
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Y Acceleration
Max: 9.7 [g] at 0.002 [s]
Min: -1.3 [g] at 0.005 [s]
10
7.5
5
2.5
0
-2.5
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0642 Pre-test Plot #2
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 124.4 [g] at 0.002 [s]
Min: -0.3 [g] at 0.019 [s]
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0642 Pre-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Resultant
Max: 269.8 [g] at 0.002 [s]
Min: 0.0 [g] at -0.001 [s]
300
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0642 Pre-test Plot #4
8730-06

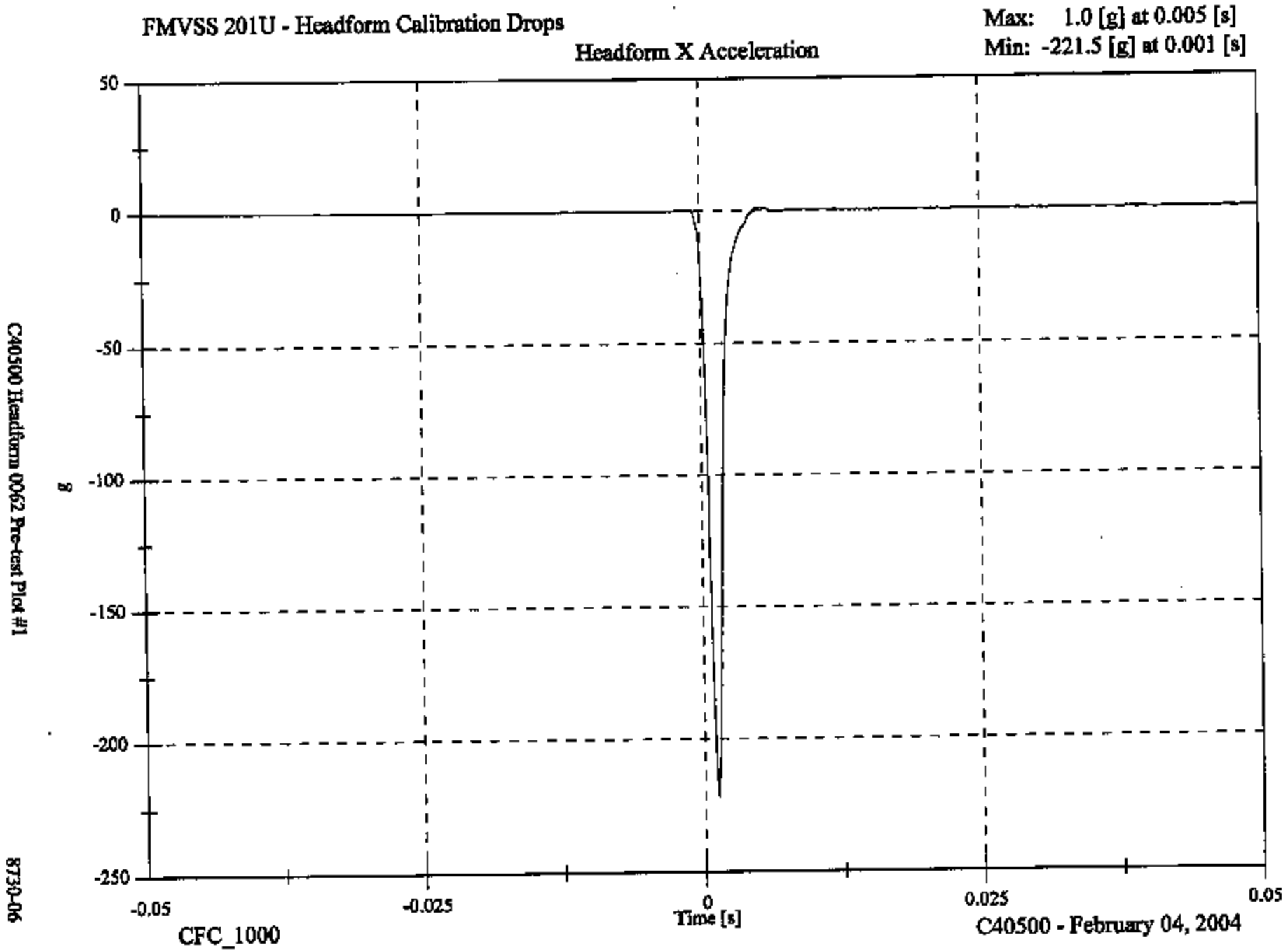
PART 572L
HEAD DROP PRE-TEST

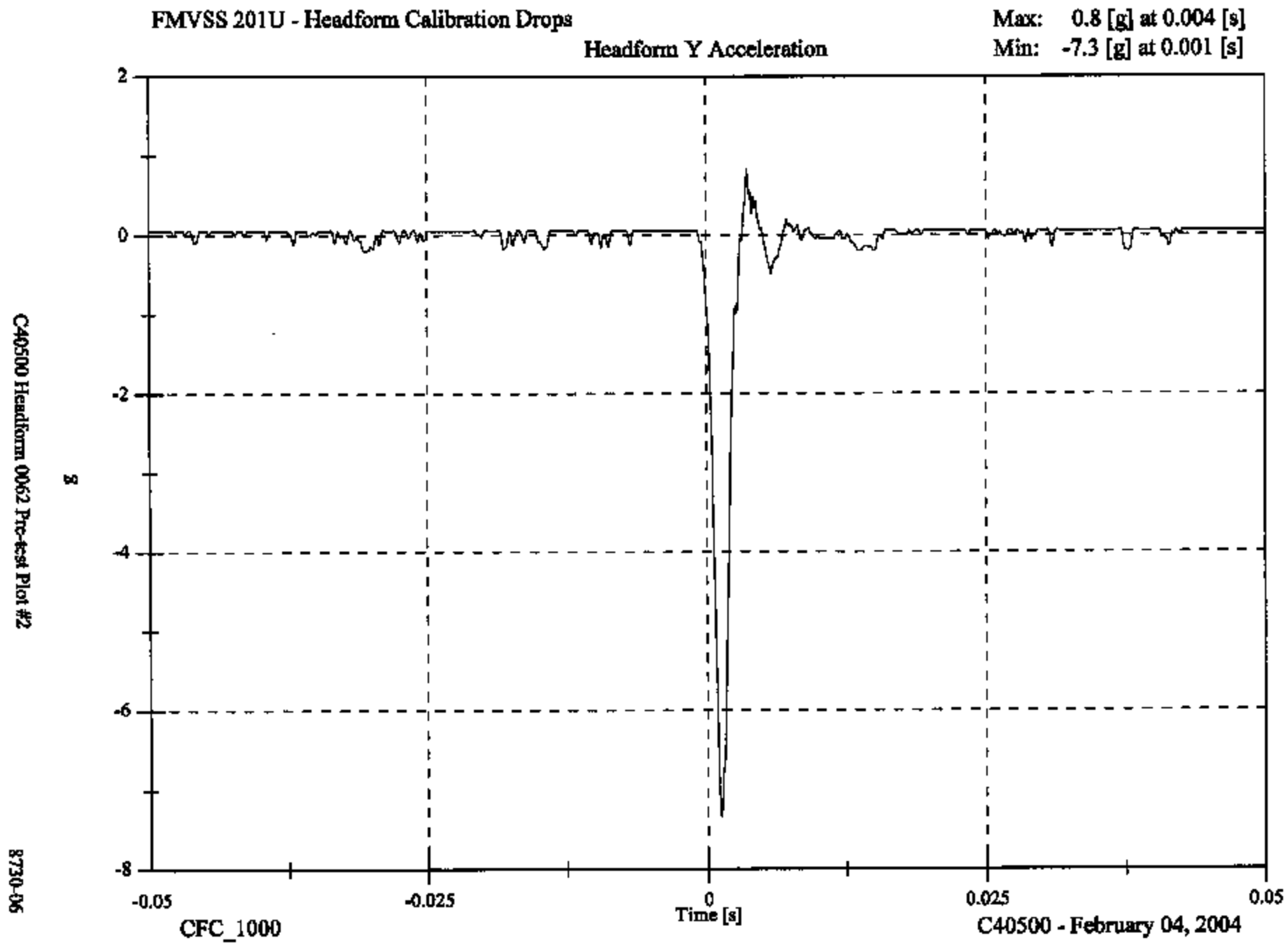
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**	
SERIAL NUMBER:	**0062**	
CALIBRATION DATE:	**February 4, 2004**	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	**19°C to 26°C**	**23**
RELATIVE HUMIDITY	**10% to 70%**	**16**
PEAK RESULTANT ACCELERATION	**225 Gs to 275 Gs**	**254.7**
PEAK LATERAL ACCELERATION	**15 Gs Maximum**	**7.3**
IS ACCELERATION CURVE UNIMODAL?	**YES**	**YES**

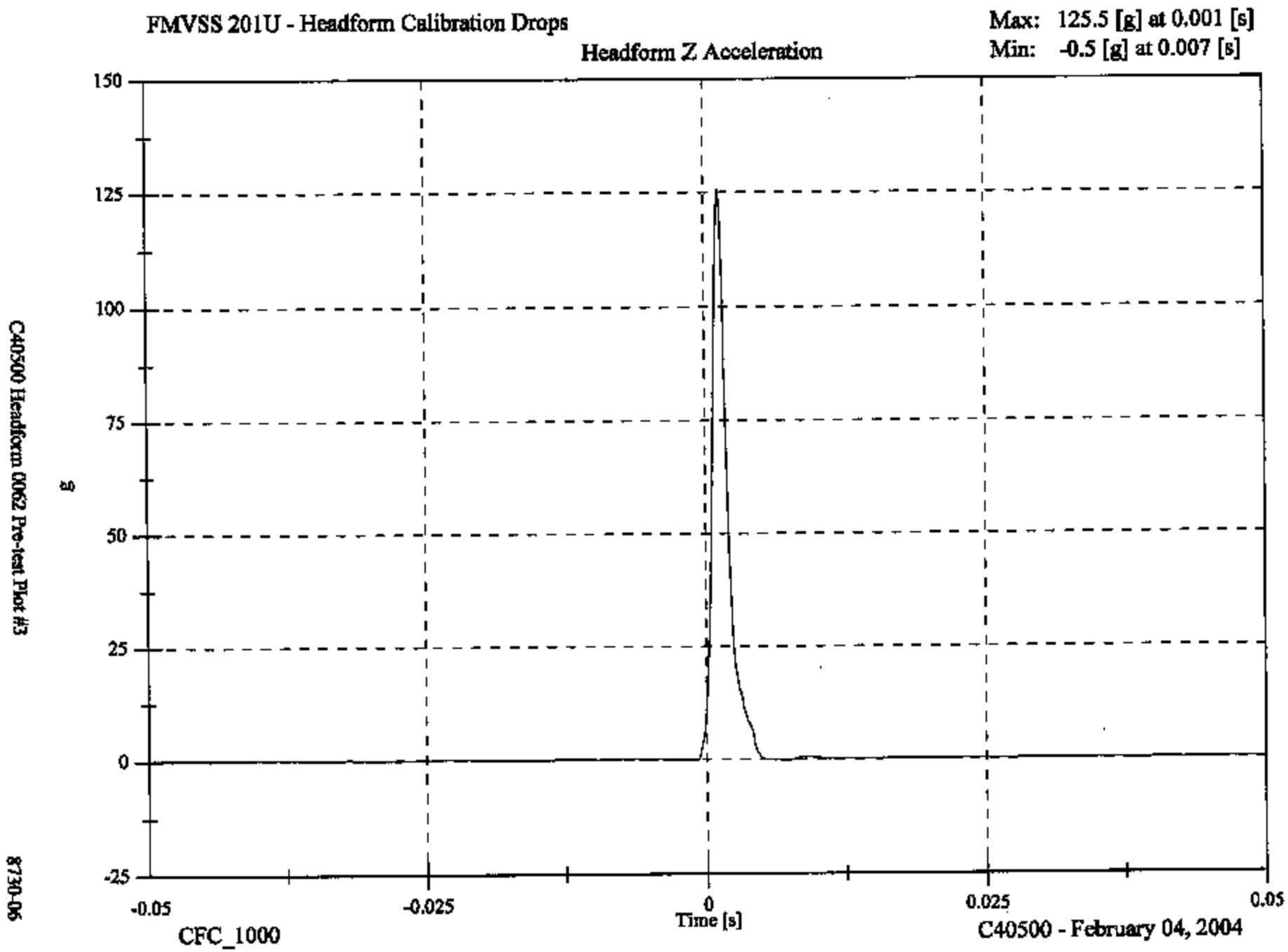
HEAD ACCELEROMETER CALIBRATION INFORMATION

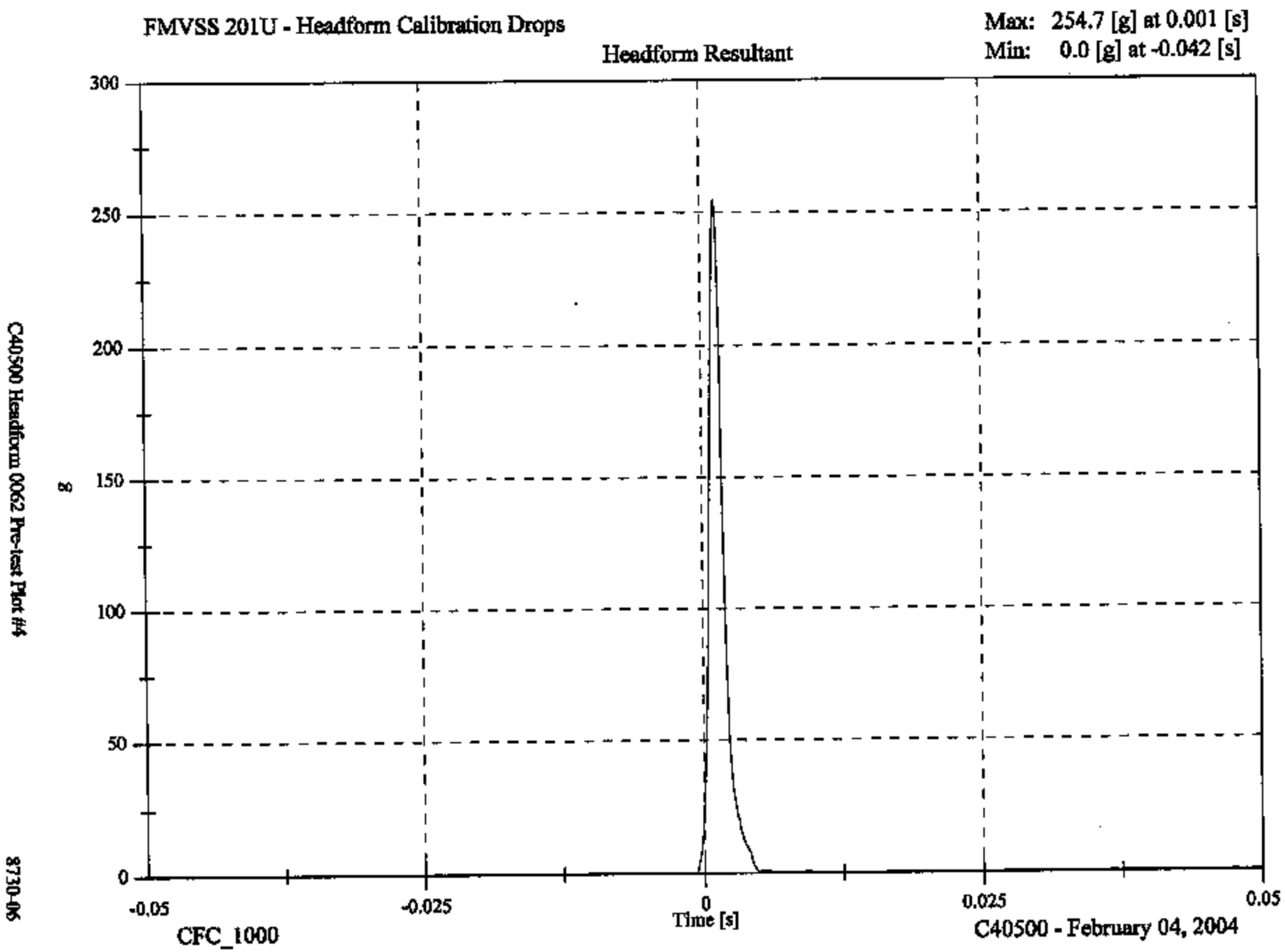
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J33127	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J33019	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J32782	08/22/03	02/23/04

REMARKS:


FMVSS 201U - Headform Calibration Drops
Headform X Acceleration
Max: 1.0 [g] at 0.005 [s]
Min: -221.5 [g] at 0.001 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0062 Pre-test Plot #1
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Y Acceleration
Max: 0.8 [g] at 0.004 [s]
Min: -7.3 [g] at 0.001 [s]
2
0
-2
-4
-6
-8
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0062 Pre-test Plot #2
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 125.5 [g] at 0.001 [s]
Min: -0.5 [g] at 0.007 [s]
150
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0062 Pre-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Resultant
Max: 254.7 [g] at 0.001 [s]
Min: 0.0 [g] at -0.042 [s]
300
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0062 Pre-test Plot #4
8730-06

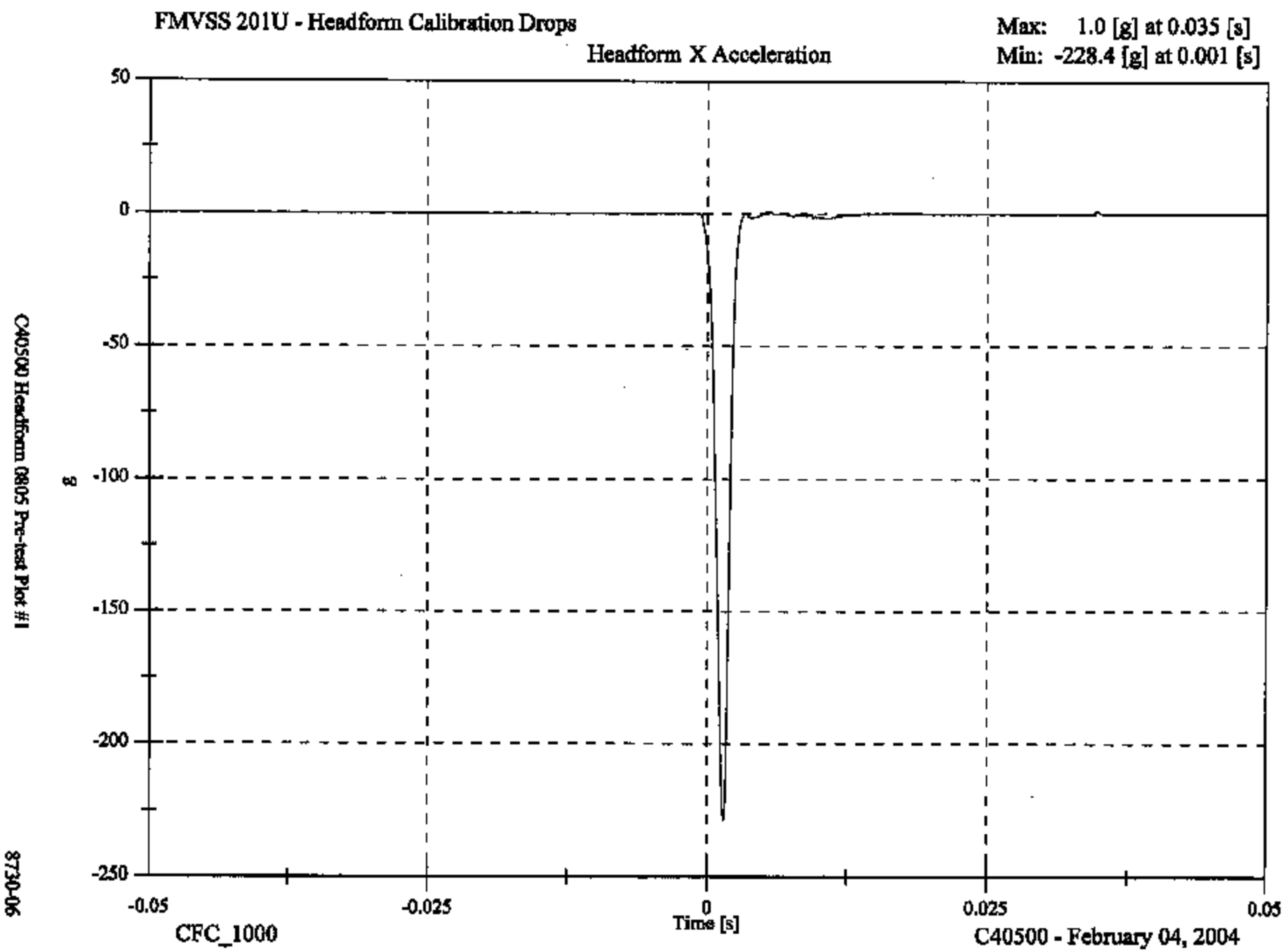
PART 572L
HEAD DROP PRE-TEST

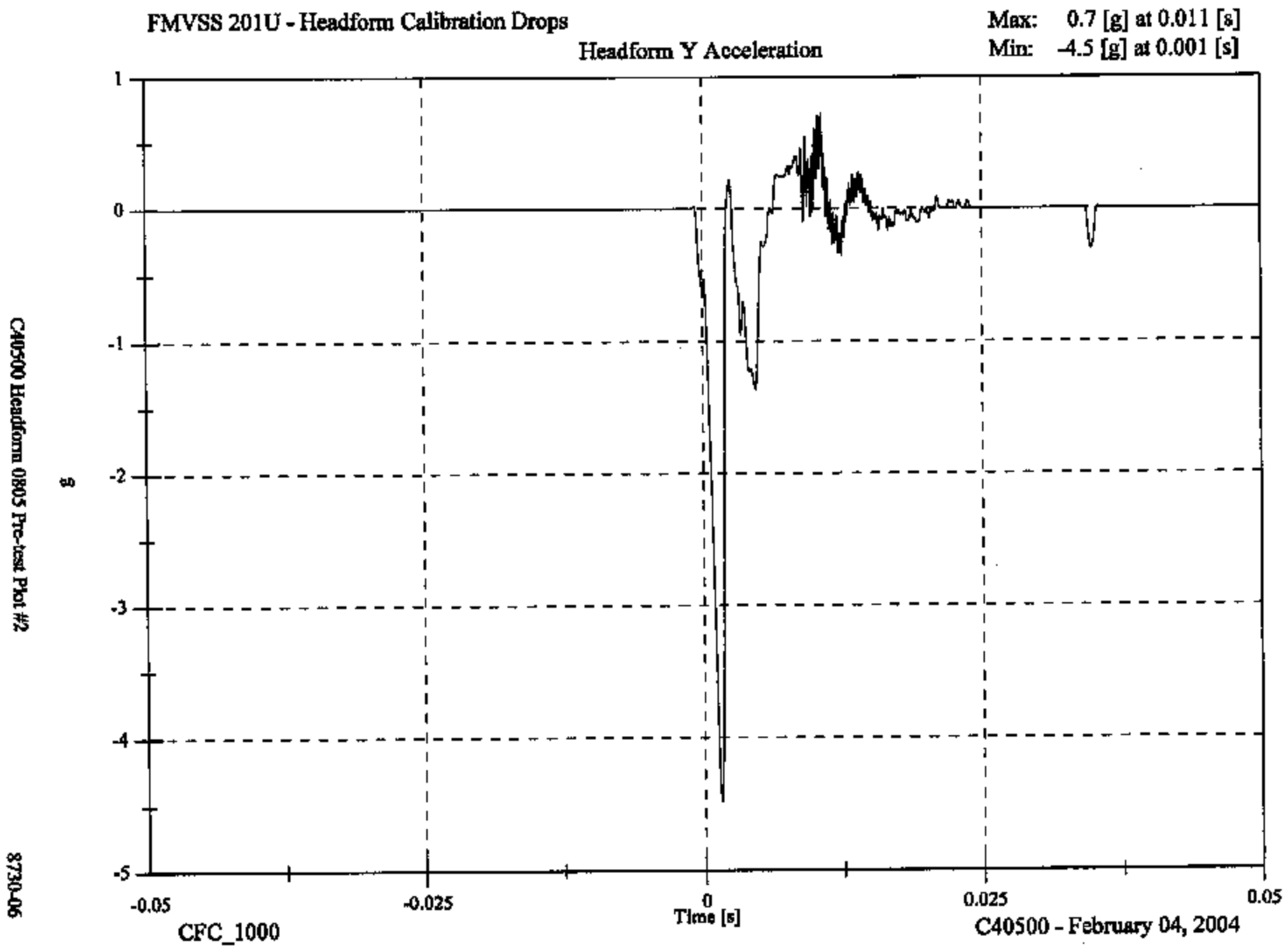
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**	
SERIAL NUMBER:	**805**	
CALIBRATION DATE:	**February 4, 2004**	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	**19°C to 26°C**	**23**
RELATIVE HUMIDITY	**10% to 70%**	**16**
PEAK RESULTANT ACCELERATION	**225 Gs to 275 Gs**	**261.7**
PEAK LATERAL ACCELERATION	**15 Gs Maximum**	**4.5**
IS ACCELERATION CURVE UNIMODAL?	**YES**	**YES**

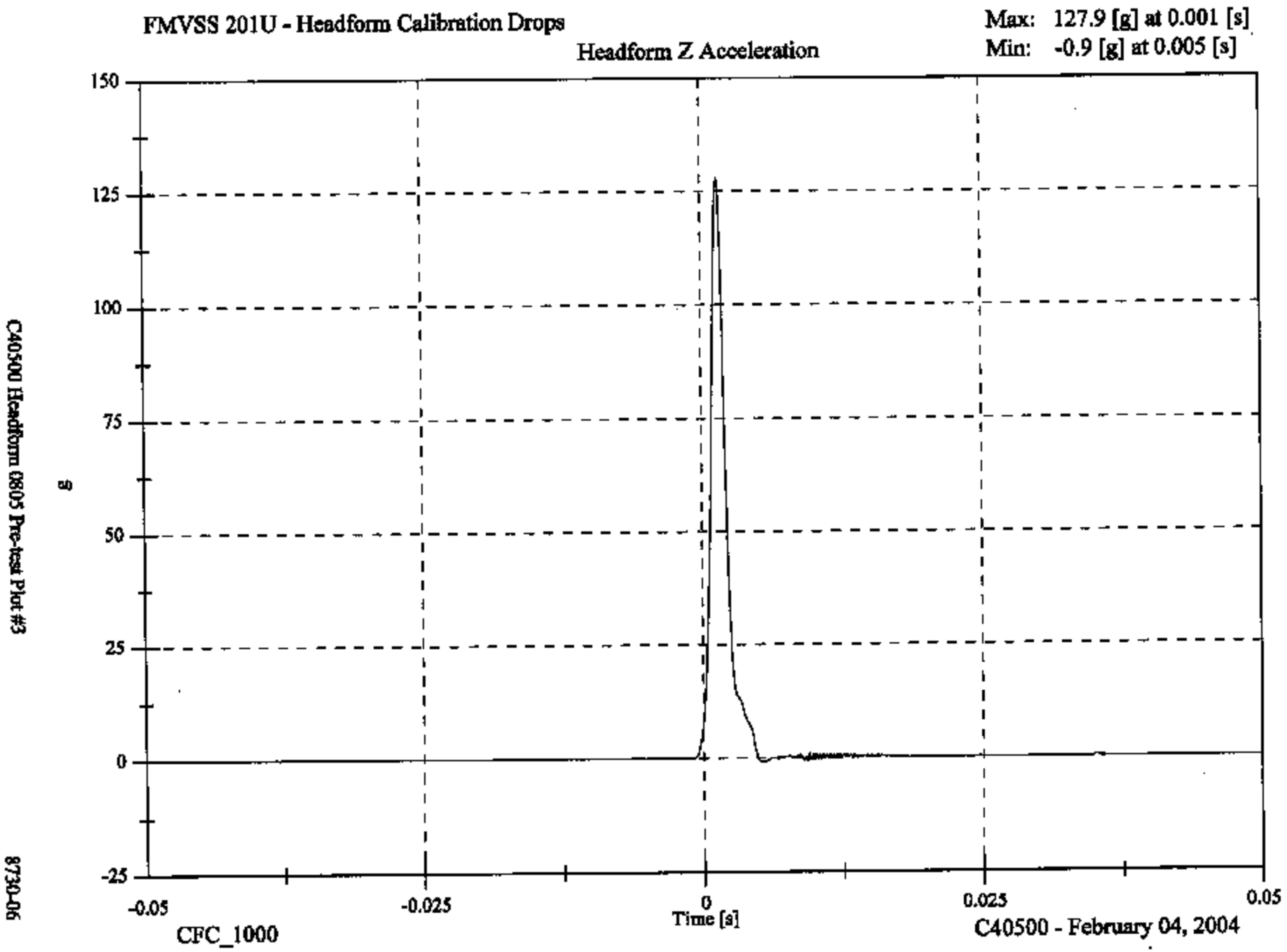
HEAD ACCELEROMETER CALIBRATION INFORMATION

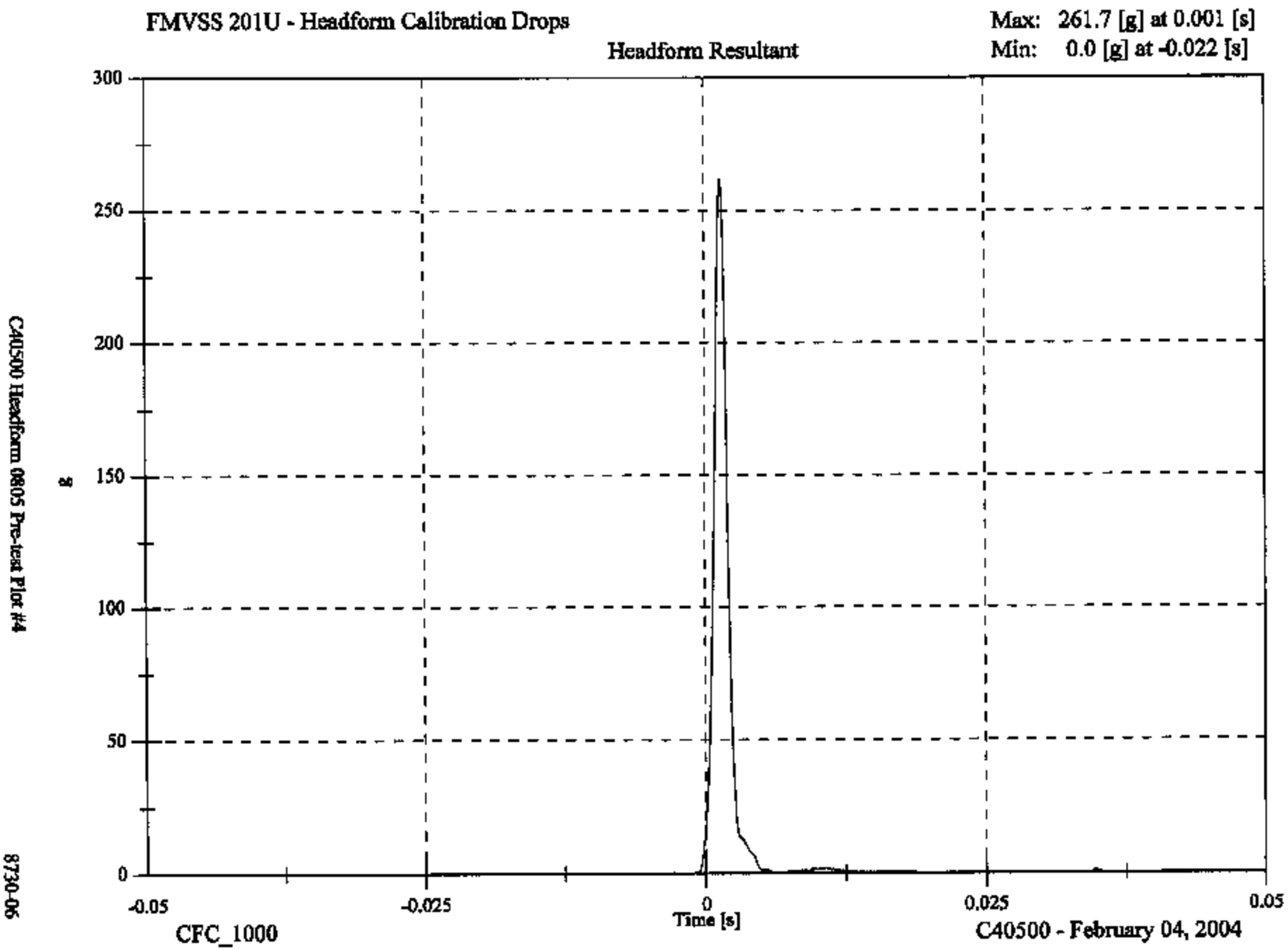
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J38127	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J37980	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J37854	08/22/03	02/23/04

REMARKS:


FMVSS 201U - Headform Calibration Drops
Headform X Acceleration
Max: 1.0 [g] at 0.035 [s]
Min: -228.4 [g] at 0.001 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0805 Pre-test Plot #1
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Y Acceleration
Max: 0.7 [g] at 0.011 [s]
Min: -4.5 [g] at 0.001 [s]
1
0
-1
-2
-3
-4
-5
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0805 Pre-test Plot #2
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 127.9 [g] at 0.001 [s]
Min: -0.9 [g] at 0.005 [s]
150
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0805 Pre-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Max: 261.7 [g] at 0.001 [s]
Min: 0.0 [g] at -0.022 [s]
Headform Resultant
300
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0805 Pre-test Pilot #4
8730-06

PART 572L
HEAD DROP PRE-TEST

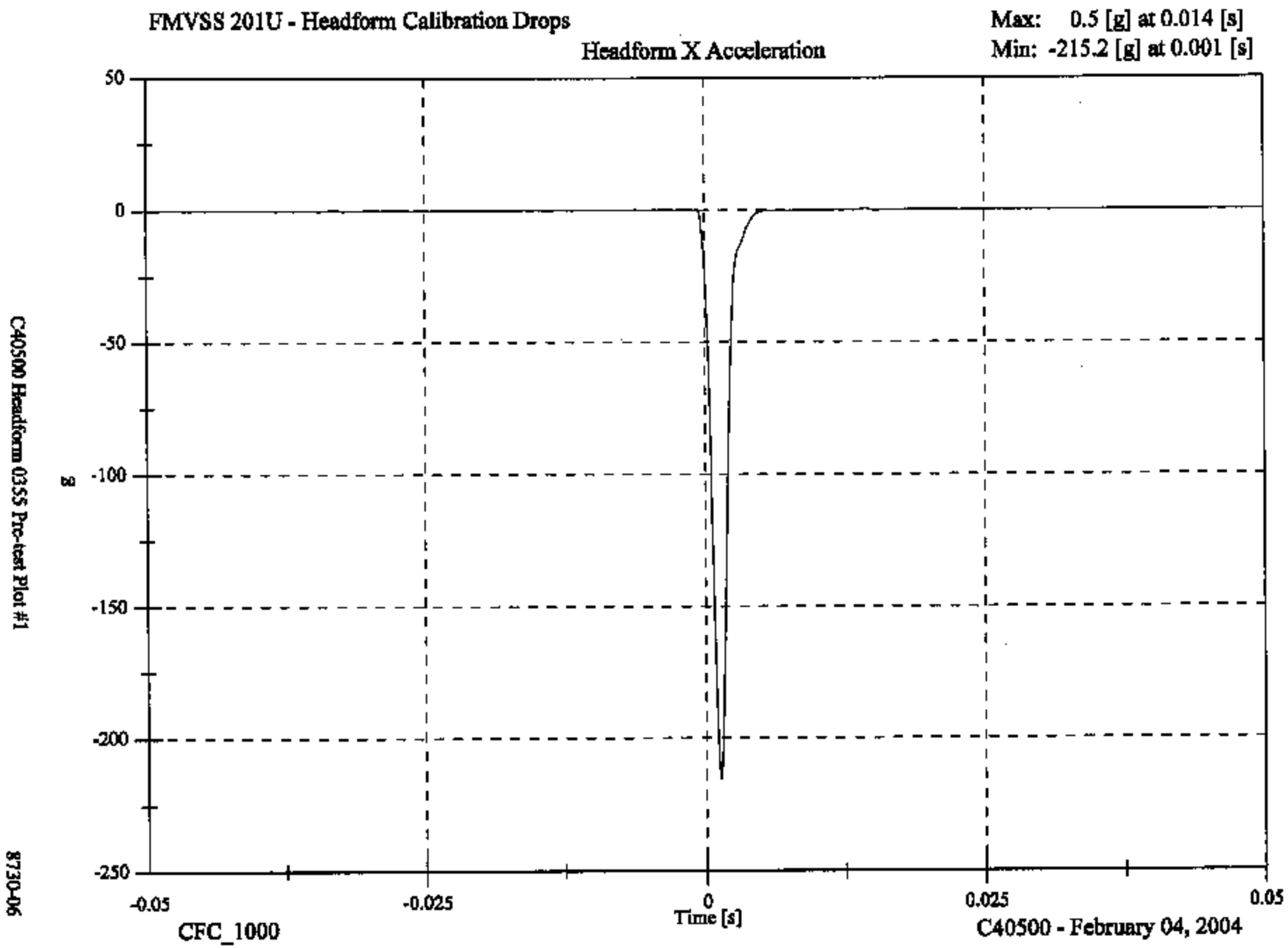
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**
SERIAL NUMBER:	**0355**
CALIBRATION DATE:	**February 4, 2004**

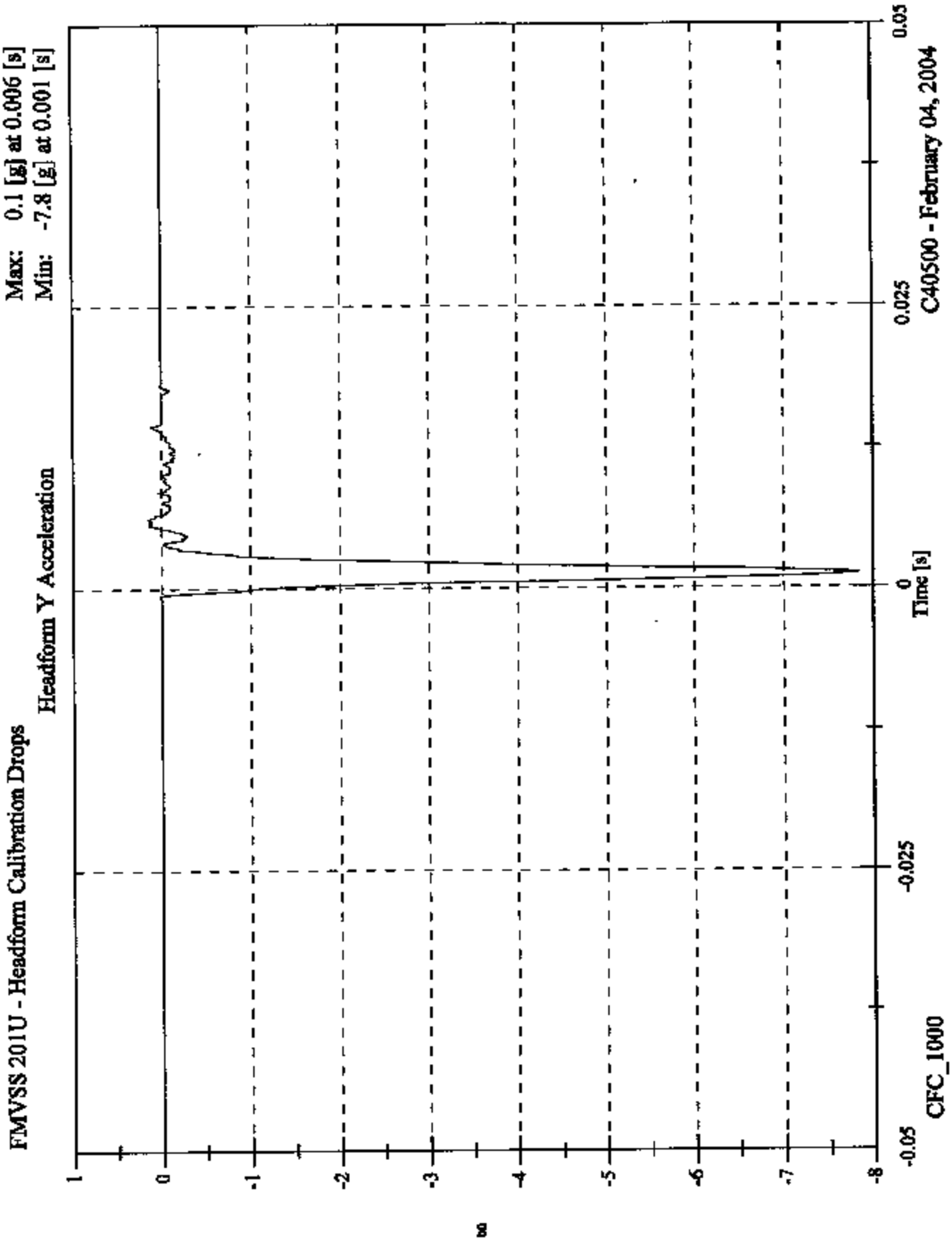
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	23
RELATIVE HUMIDITY	10% to 70%	16
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	240.6
PEAK LATERAL ACCELERATION	15 Gs Maximum	7.8
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J28671	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J32779	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J25854	08/22/03	02/23/04

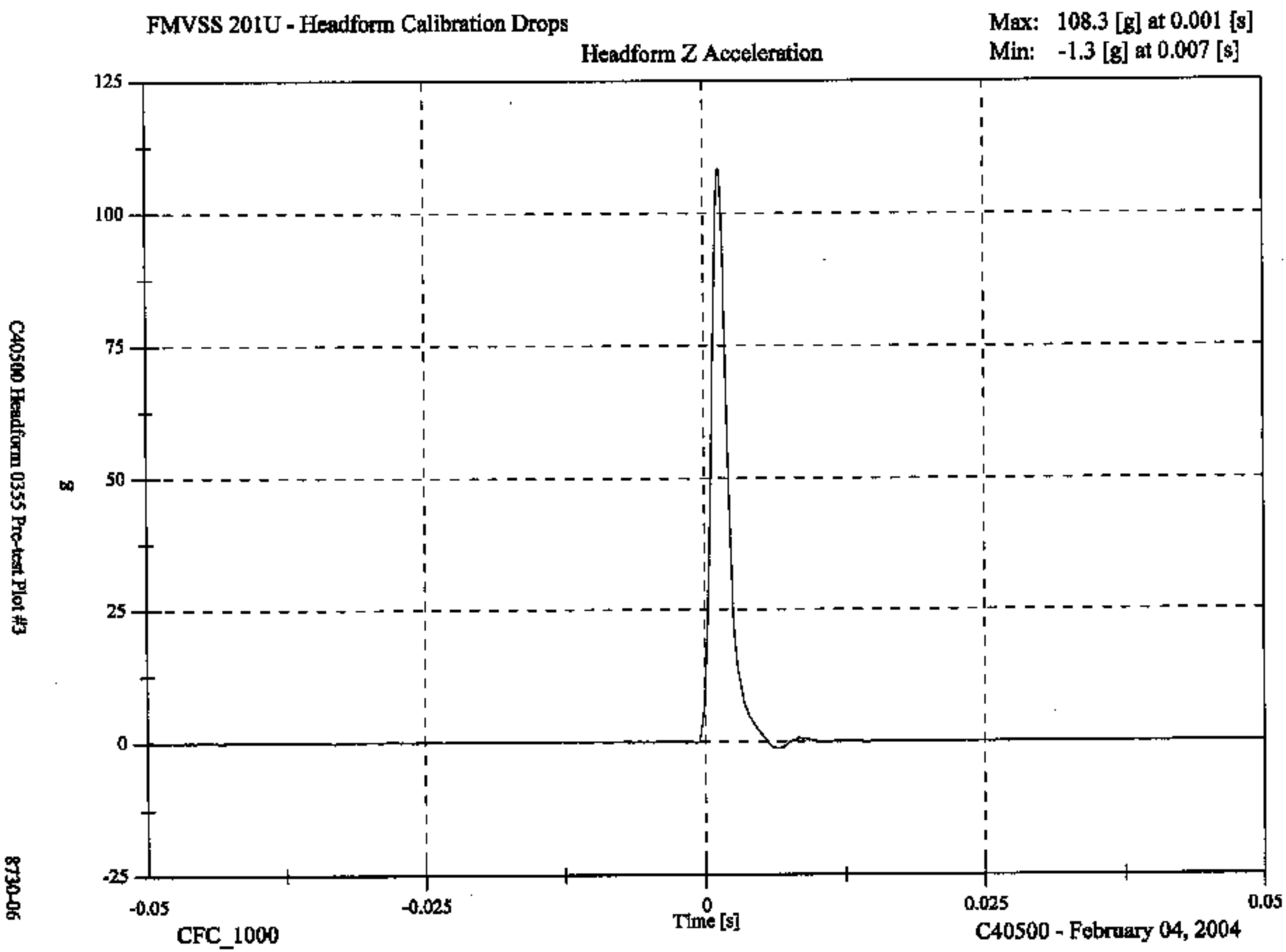
REMARKS:

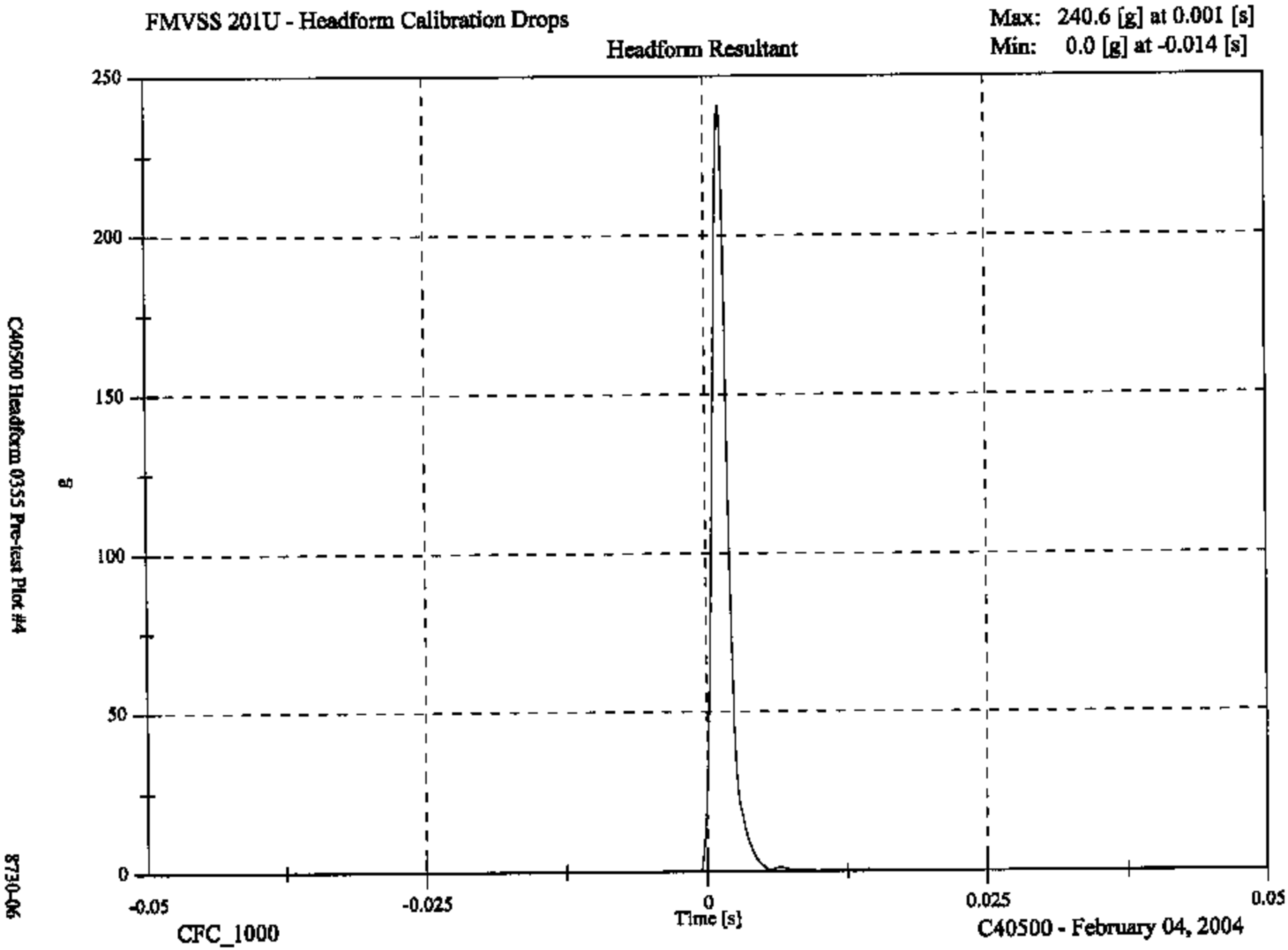

FMVSS 201U - Headform Calibration Drops
Headform X Acceleration
Max: 0.5 [g] at 0.014 [s]
Min: -215.2 [g] at 0.001 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0355 Pre-test Plot #1
8730-06



C40500 Headform 0355 Pre-test Plot #2

8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 108.3 [g] at 0.001 [s]
Min: -1.3 [g] at 0.007 [s]
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0355 Pre-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Resultant
Max: 240.6 [g] at 0.001 [s]
Min: 0.0 [g] at -0.014 [s]
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 0355 Pre-test Plot #4
8730-06

PART 572L
HEAD DROP PRE-TEST

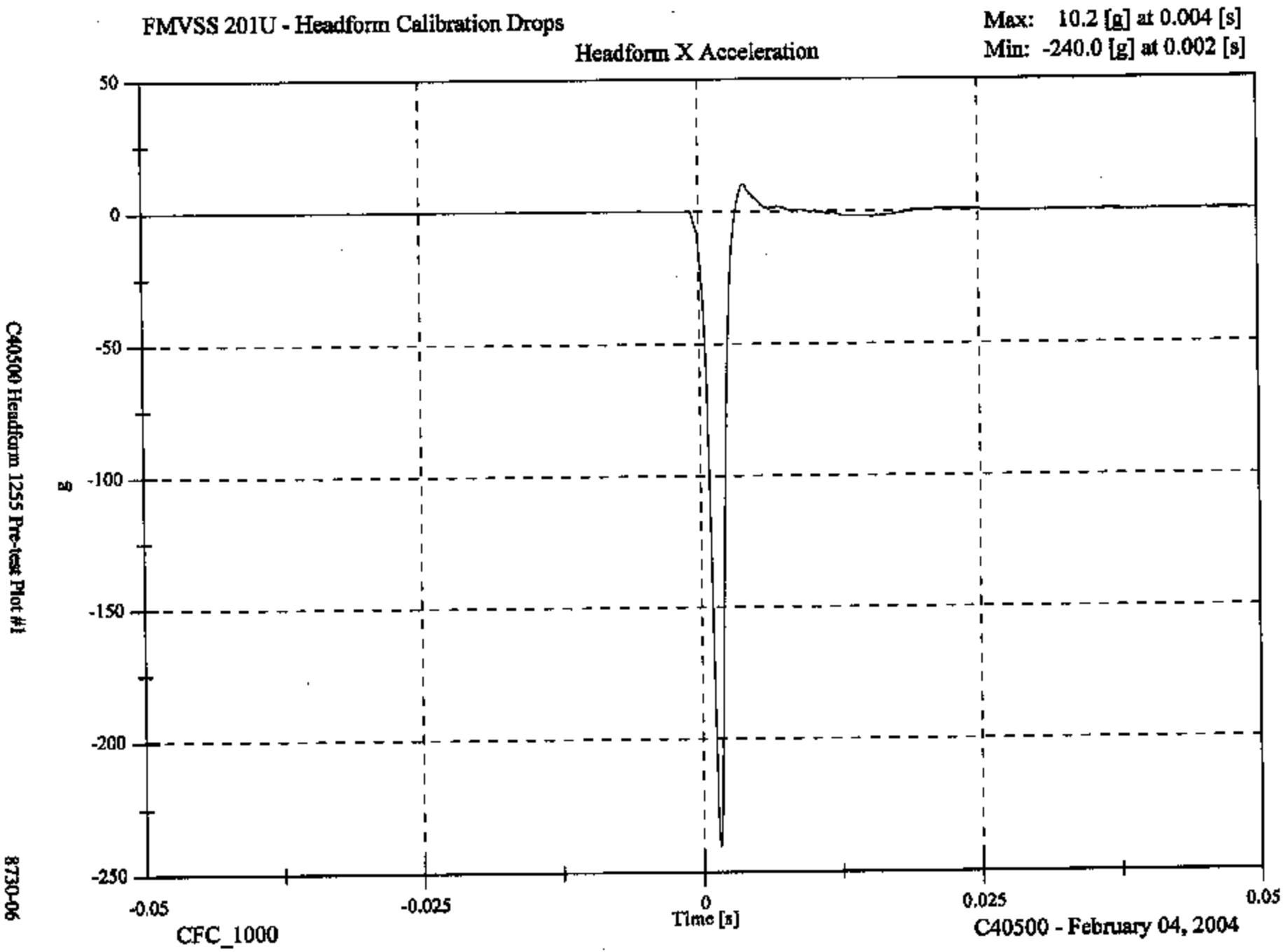
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**
SERIAL NUMBER:	**1255**
CALIBRATION DATE:	**February 4, 2004**

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	23
RELATIVE HUMIDITY	10% to 70%	16
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	267.3
PEAK LATERAL ACCELERATION	15 Gs Maximum	4.5
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

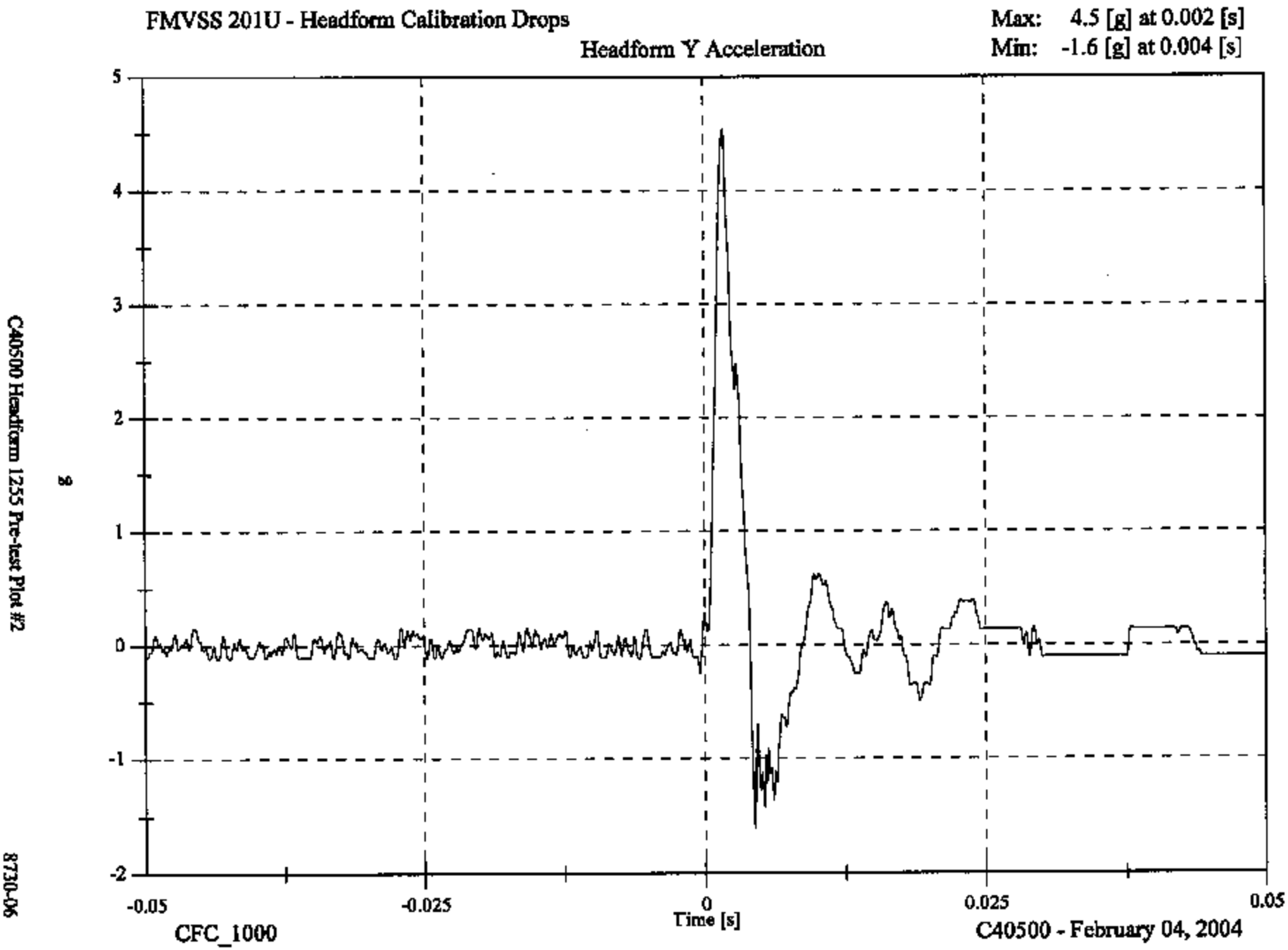
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J41006	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J40994	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J41007	08/22/03	02/23/04

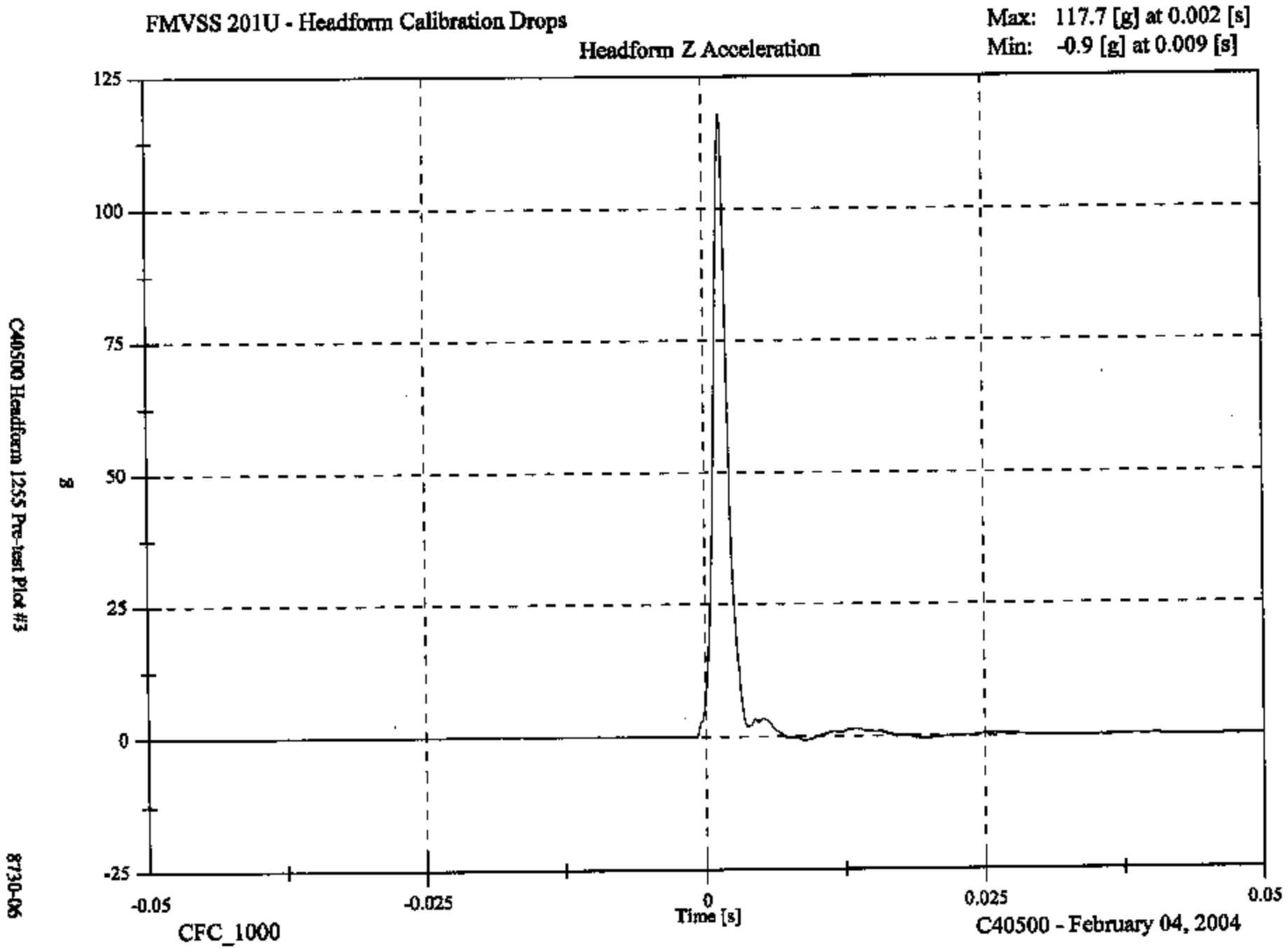
REMARKS:

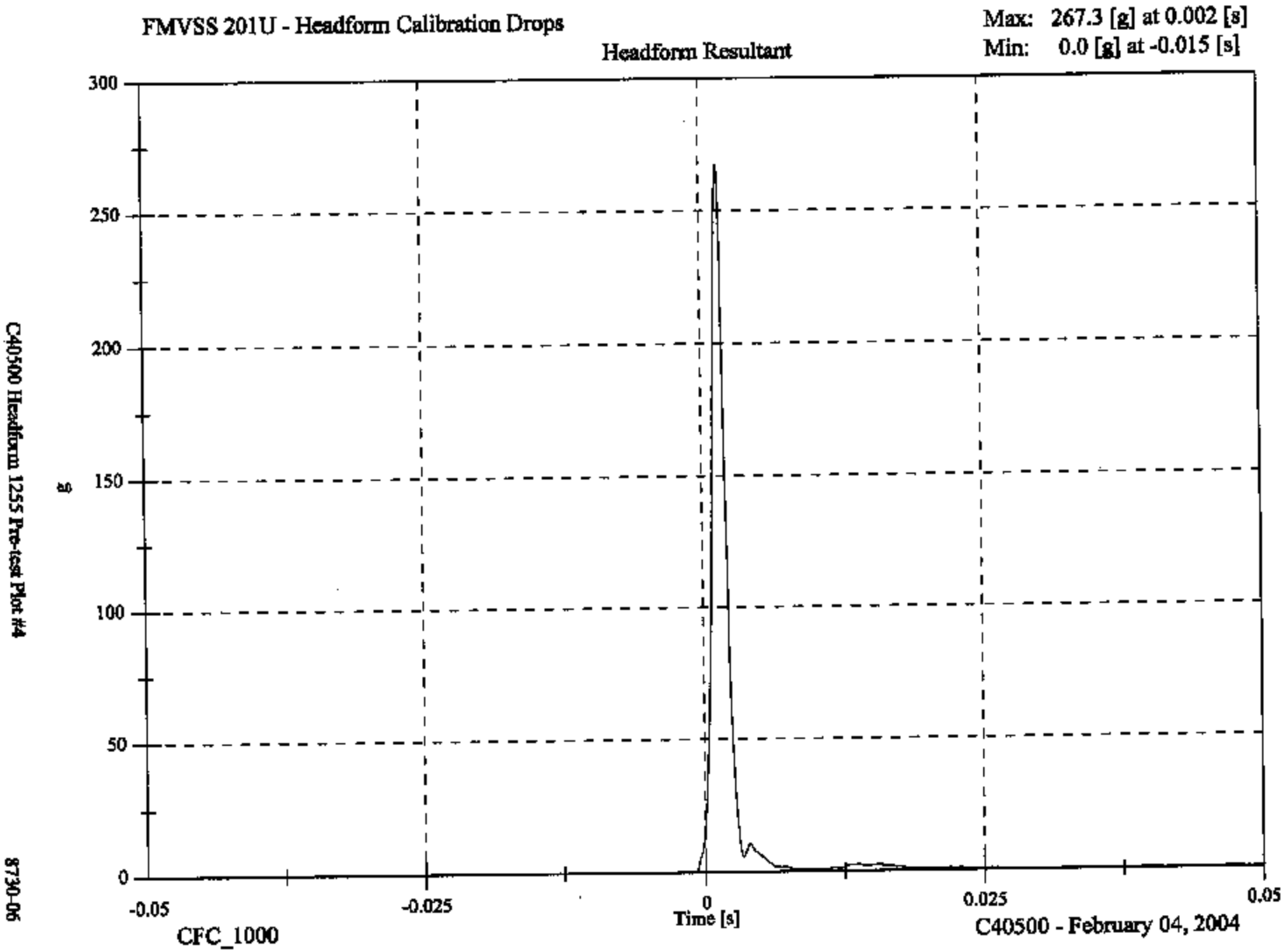


C40500 Headform 1255 Pre-test Plot #1

8730-06


FMVSS 201U - Headform Calibration Drops
Headform Y Acceleration
Max: 4.5 [g] at 0.002 [s]
Min: -1.6 [g] at 0.004 [s]
5
4
3
2
1
0
-1
-2
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 1255 Pre-test Plot #2
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 117.7 [g] at 0.002 [s]
Min: -0.9 [g] at 0.009 [s]
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 1255 Pre-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Resultant
Max: 267.3 [g] at 0.002 [s]
Min: 0.0 [g] at -0.015 [s]
300
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 04, 2004
C40500 Headform 1255 Pre-test Plot #4
8730-06

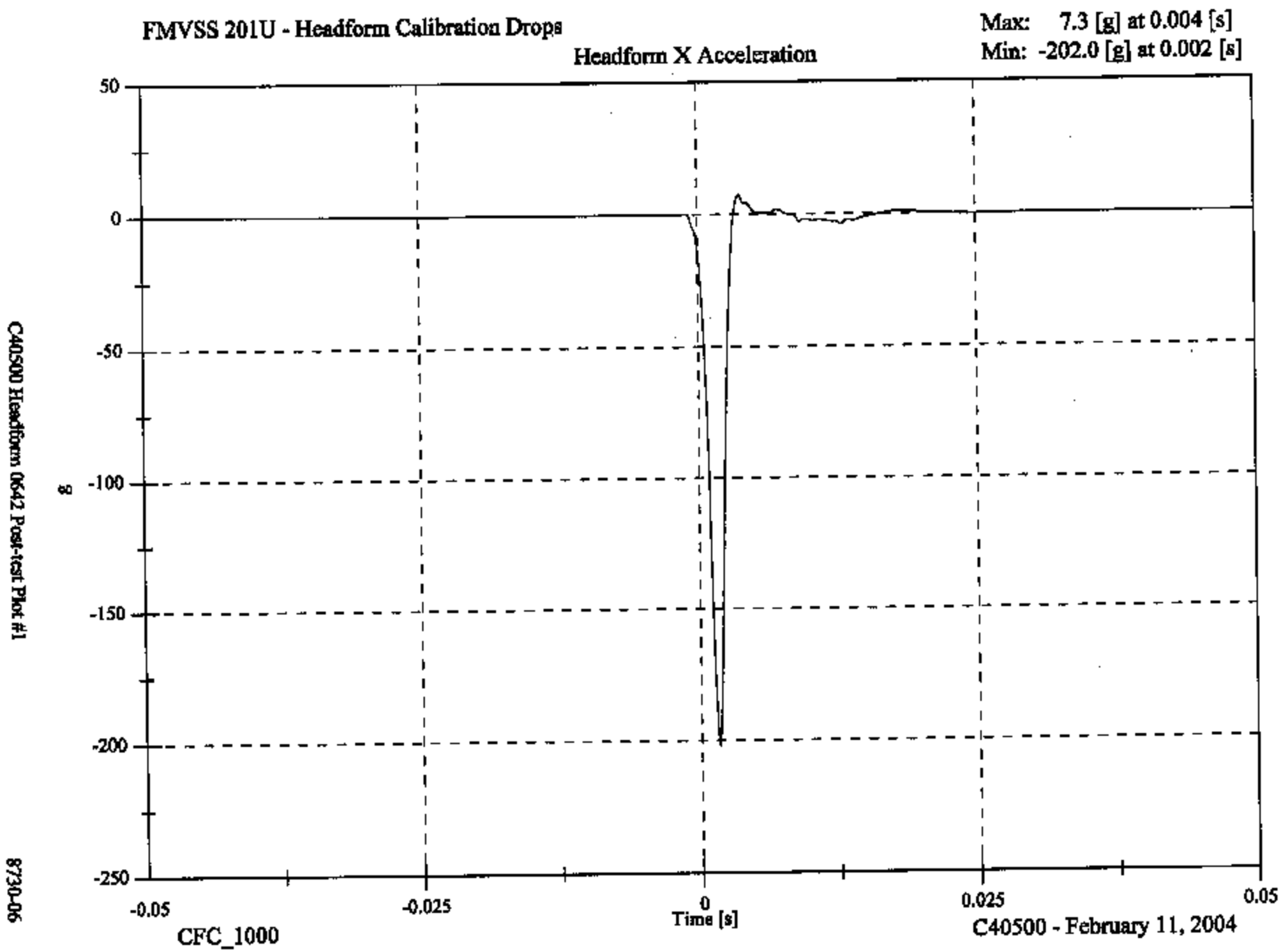
PART 572L
HEAD DROP POST-TEST

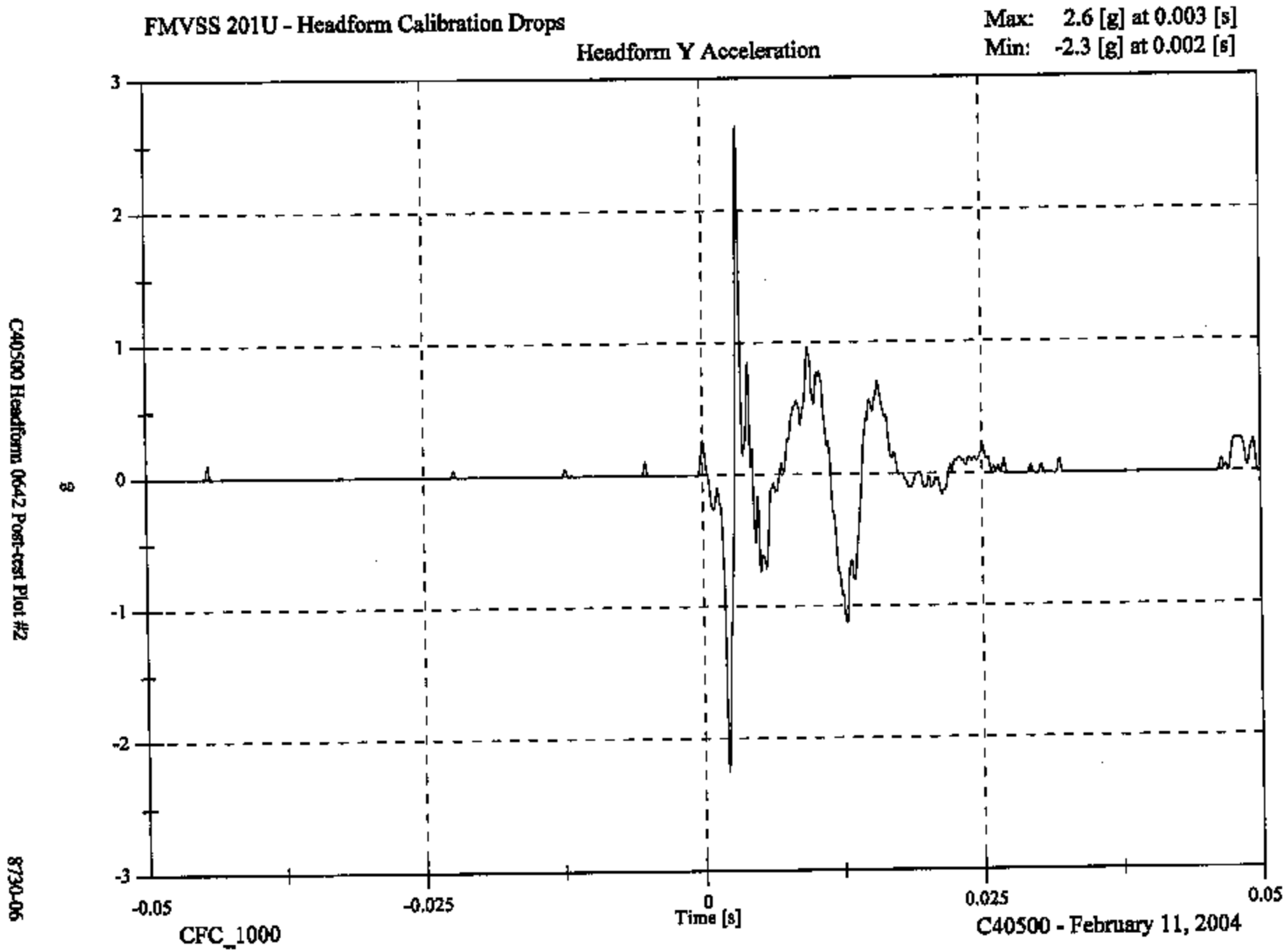
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**	
SERIAL NUMBER:	**0642**	
CALIBRATION DATE:	**February 11, 2004**	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	**19°C to 26°C**	**24**
RELATIVE HUMIDITY	**10% to 70%**	**18**
PEAK RESULTANT ACCELERATION	**225 Gs to 275 Gs**	**227.8**
PEAK LATERAL ACCELERATION	**15 Gs Maximum**	**2.6**
IS ACCELERATION CURVE UNIMODAL?	**YES**	**YES**

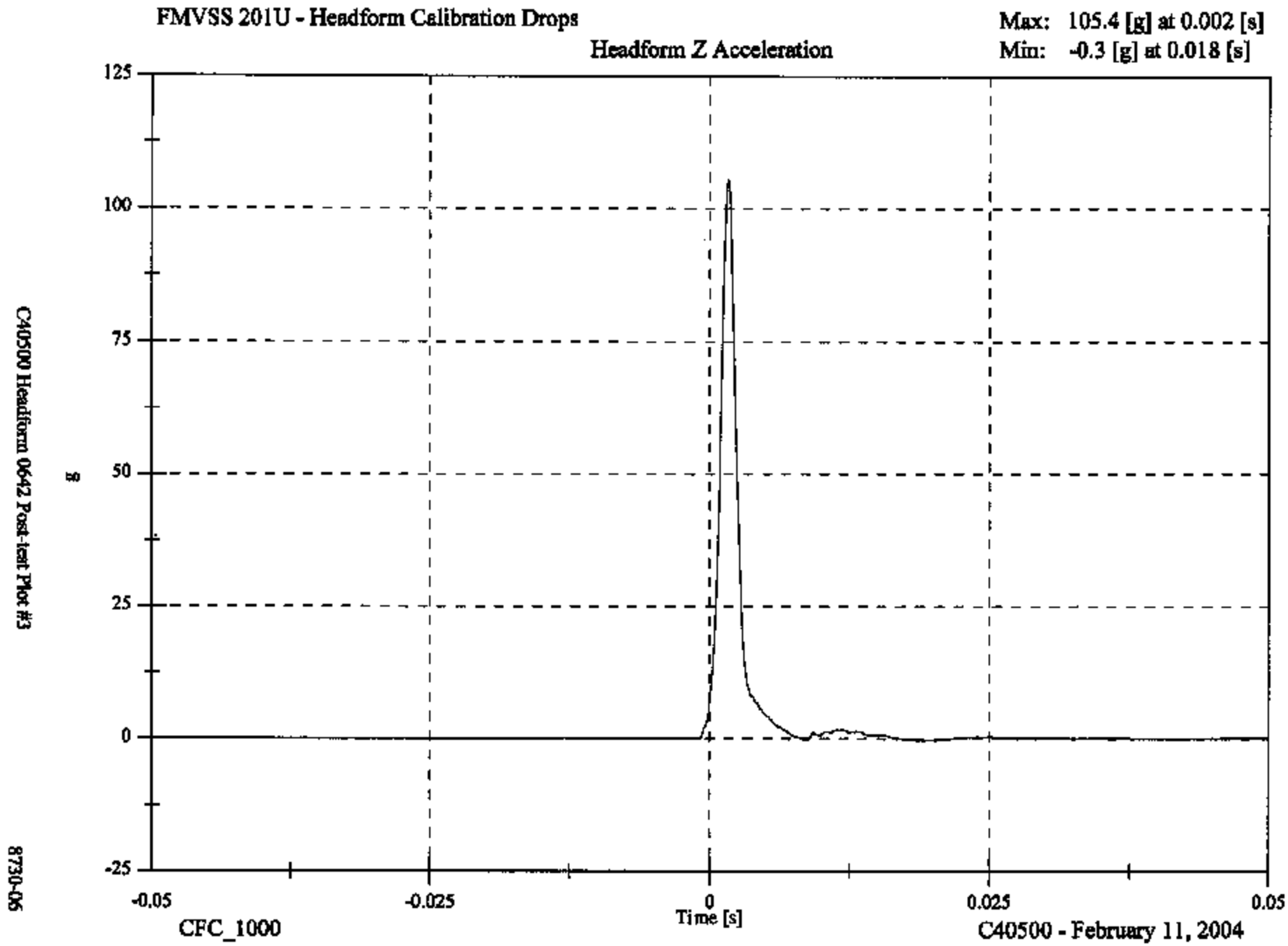
HEAD ACCELEROMETER CALIBRATION INFORMATION

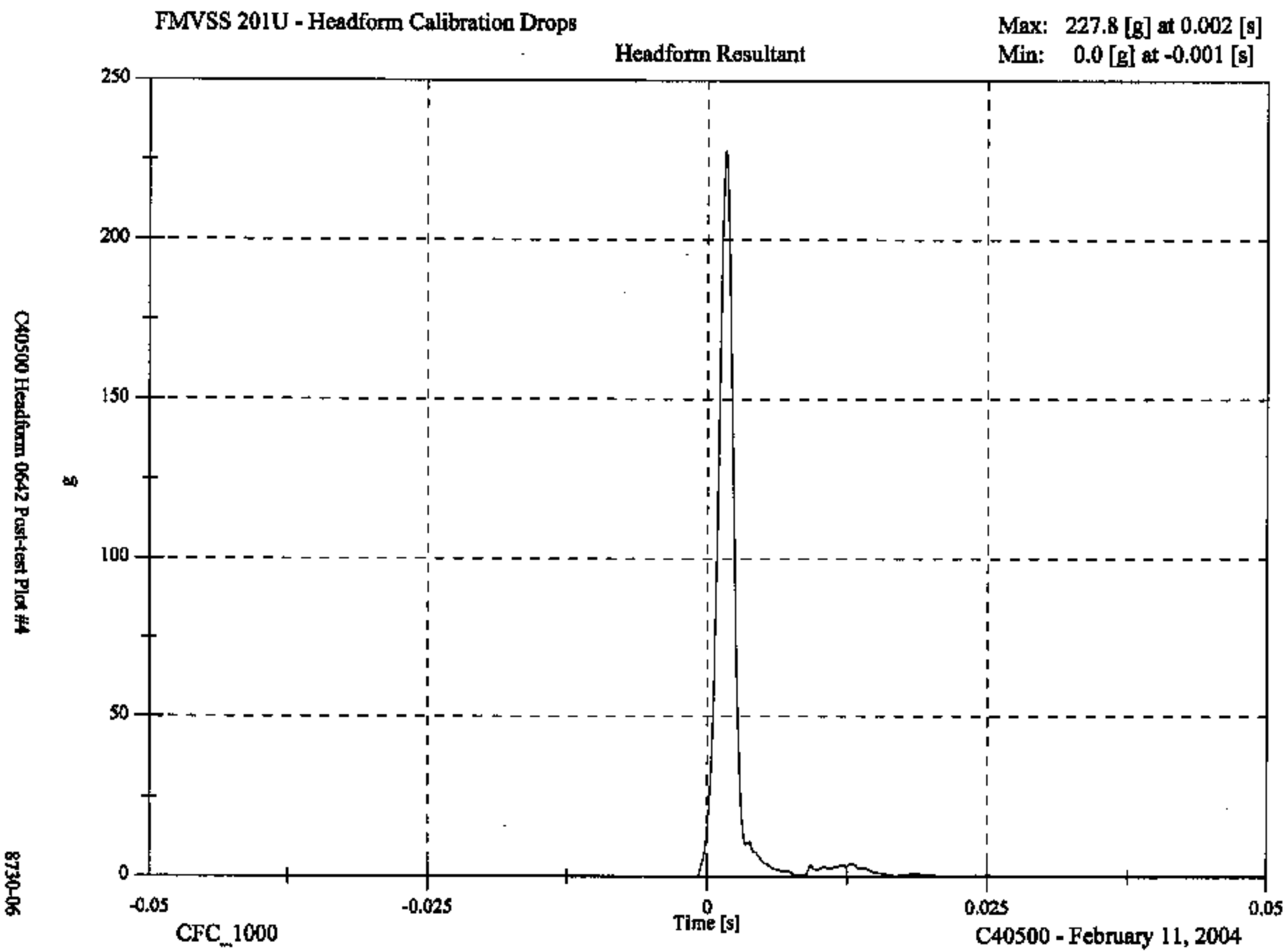
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J24876	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J33030	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J31809	08/22/03	02/23/04

REMARKS:


FMVSS 201U - Headform Calibration Drops
Headform X Acceleration
Max: 7.3 [g] at 0.004 [s]
Min: -202.0 [g] at 0.002 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0642 Post-test Plot #1
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Y Acceleration
Max: 2.6 [g] at 0.003 [s]
Min: -2.3 [g] at 0.002 [s]
3
2
1
0
-1
-2
-3
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0642 Post-test Plot #2
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 105.4 [g] at 0.002 [s]
Min: -0.3 [g] at 0.018 [s]
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0642 Post-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Resultant
Max: 227.8 [g] at 0.002 [s]
Min: 0.0 [g] at -0.001 [s]
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0642 Post-test Plot #4
8730-06

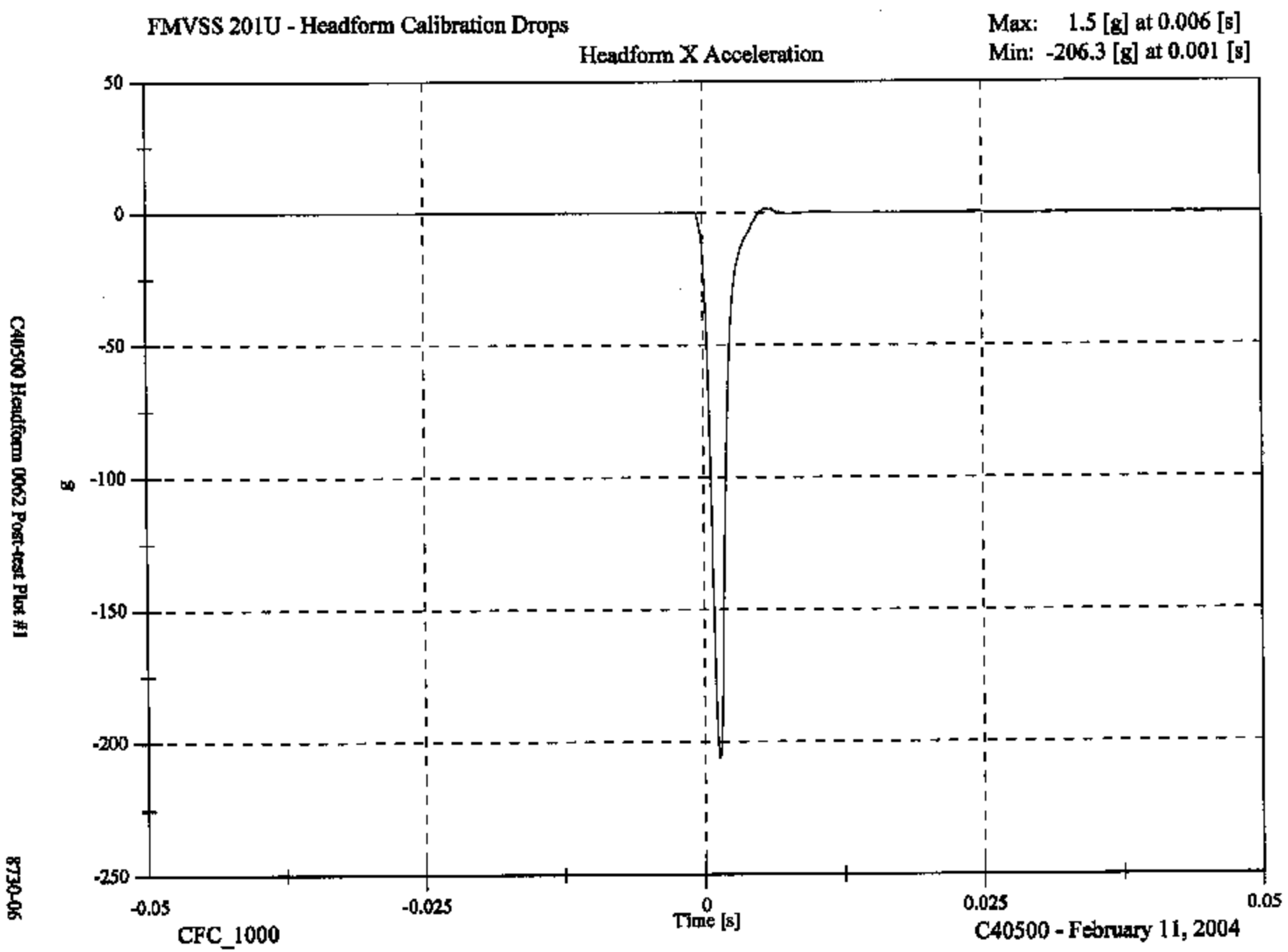
PART 572L
HEAD DROP POST-TEST

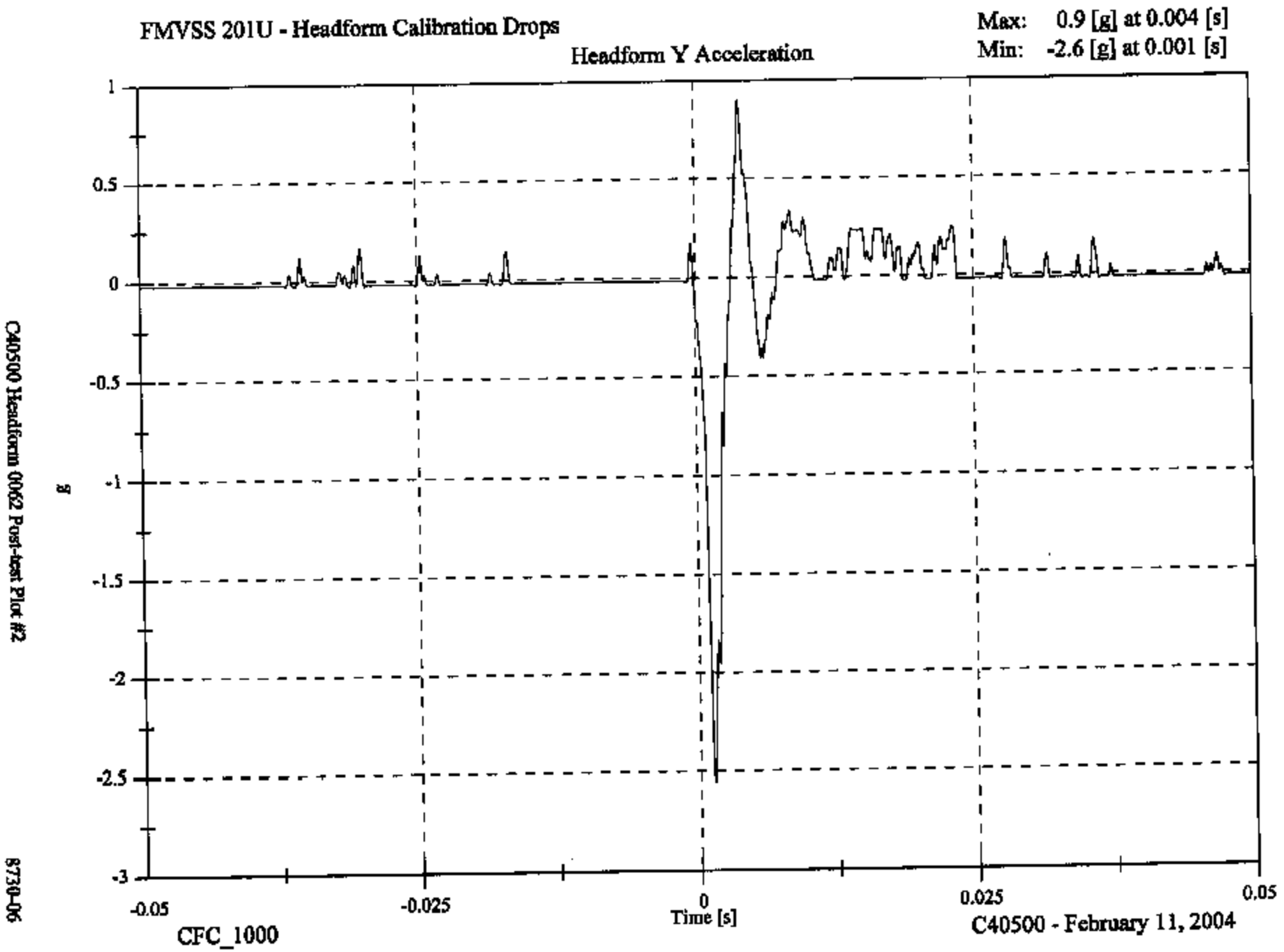
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**	
SERIAL NUMBER:	**0062**	
CALIBRATION DATE:	**February 11, 2004**	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	**19°C to 26°C**	**24**
RELATIVE HUMIDITY	**10% to 70%**	**18**
PEAK RESULTANT ACCELERATION	**225 Gs to 275 Gs**	**234.8**
PEAK LATERAL ACCELERATION	**15 Gs Maximum**	**2.6**
IS ACCELERATION CURVE UNIMODAL?	**YES**	**YES**

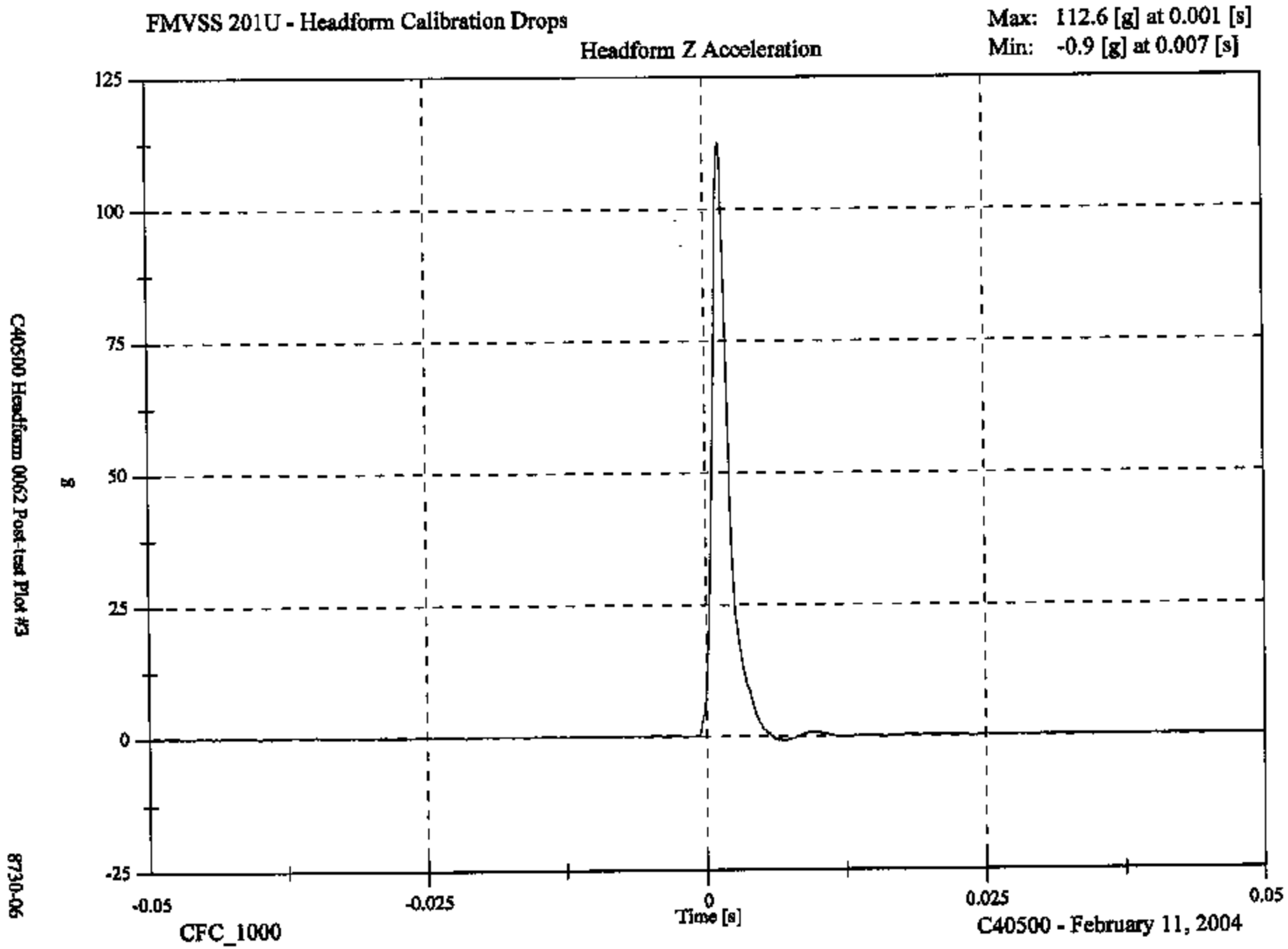
HEAD ACCELEROMETER CALIBRATION INFORMATION

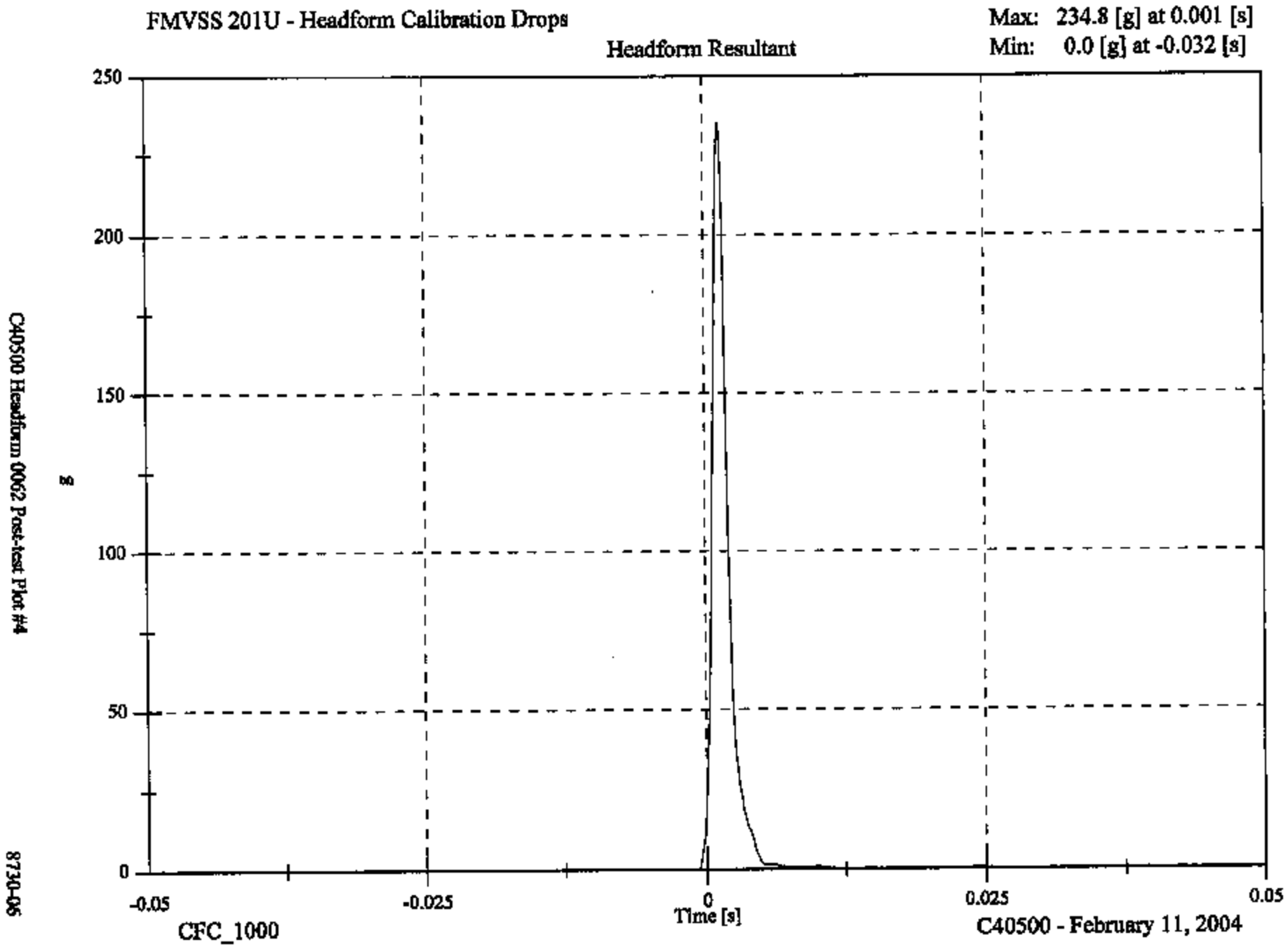
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	**ENDEVCO**	**7264-2000T**	**J33127**	**08/22/03**	**02/23/04**
2 - LATERAL	**ENDEVCO**	**7264-2000T**	**J33019**	**08/22/03**	**02/23/04**
3 - VERTICAL	**ENDEVCO**	**7264-2000T**	**J32782**	**08/22/03**	**02/23/04**

REMARKS:


FMVSS 201U - Headform Calibration Drops
Headform X Acceleration
Max: 1.5 [g] at 0.006 [s]
Min: -206.3 [g] at 0.001 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0062 Post-test Plot #1
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Y Acceleration
Max: 0.9 [g] at 0.004 [s]
Min: -2.6 [g] at 0.001 [s]
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
-3
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0062 Post-test Plot #2
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 112.6 [g] at 0.001 [s]
Min: -0.9 [g] at 0.007 [s]
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0062 Post-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Resultant
Max: 234.8 [g] at 0.001 [s]
Min: 0.0 [g] at -0.032 [s]
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0062 Post-test Plot #4
8730-06

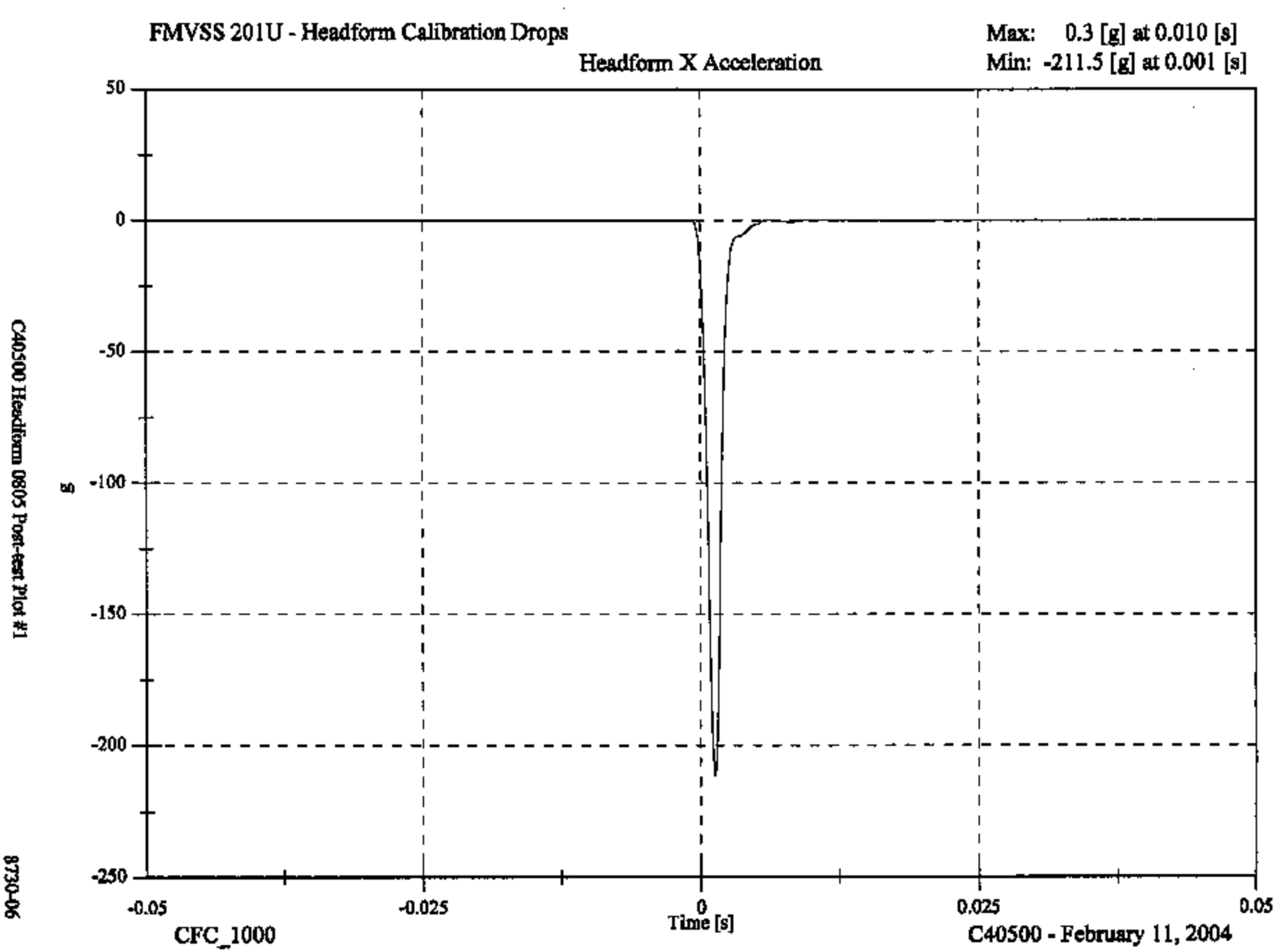
PART 572L
HEAD DROP POST-TEST

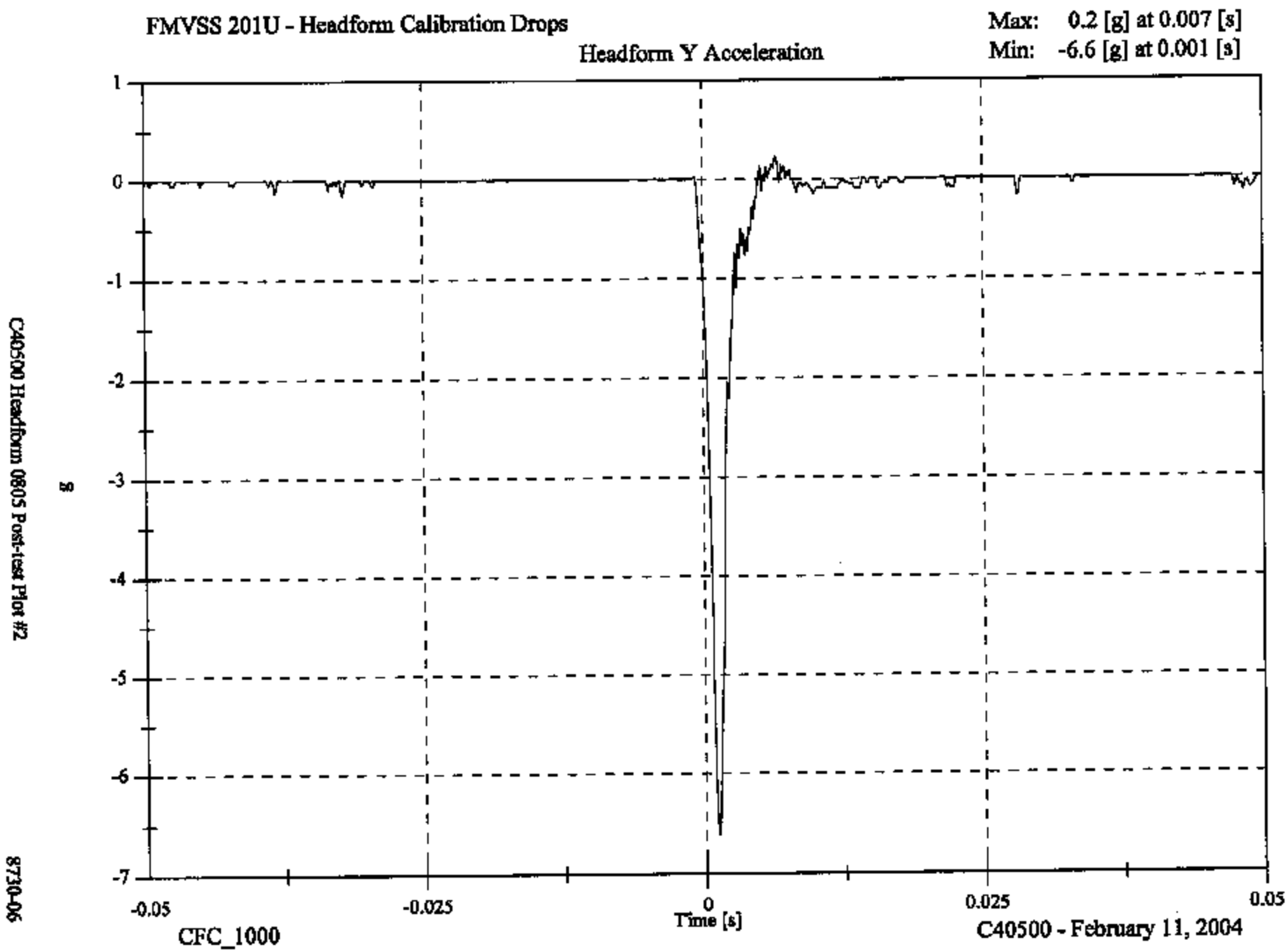
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**	
SERIAL NUMBER:	**505**	
CALIBRATION DATE:	**February 11, 2004**	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	**19°C to 26°C**	**24**
RELATIVE HUMIDITY	**10% to 70%**	**18**
PEAK RESULTANT ACCELERATION	**225 Gs to 275 Gs**	**246.4**
PEAK LATERAL ACCELERATION	**15 Gs Maximum**	**6.6**
IS ACCELERATION CURVE UNIMODAL?	**YES**	**YES**

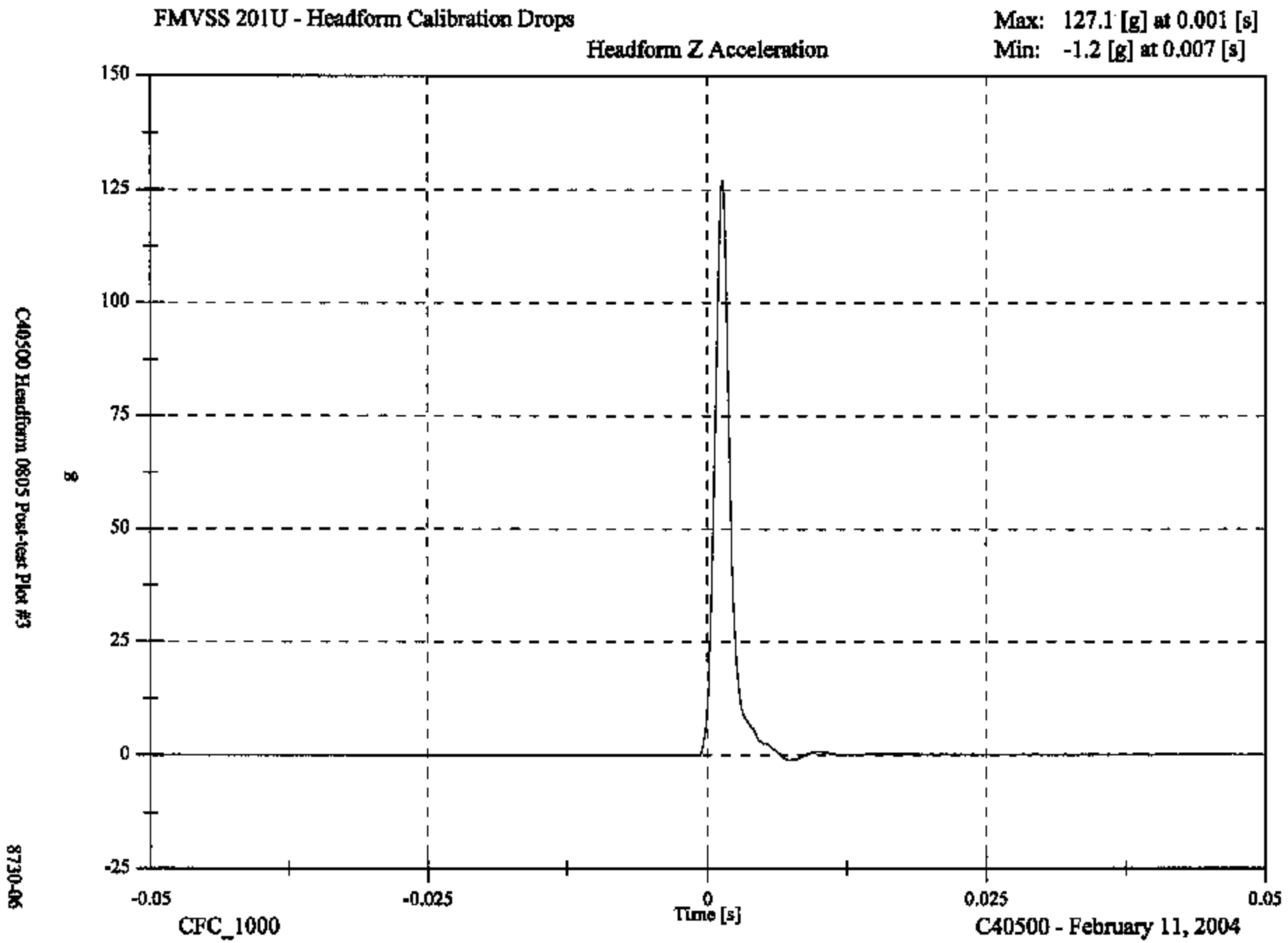
HEAD ACCELEROMETER CALIBRATION INFORMATION

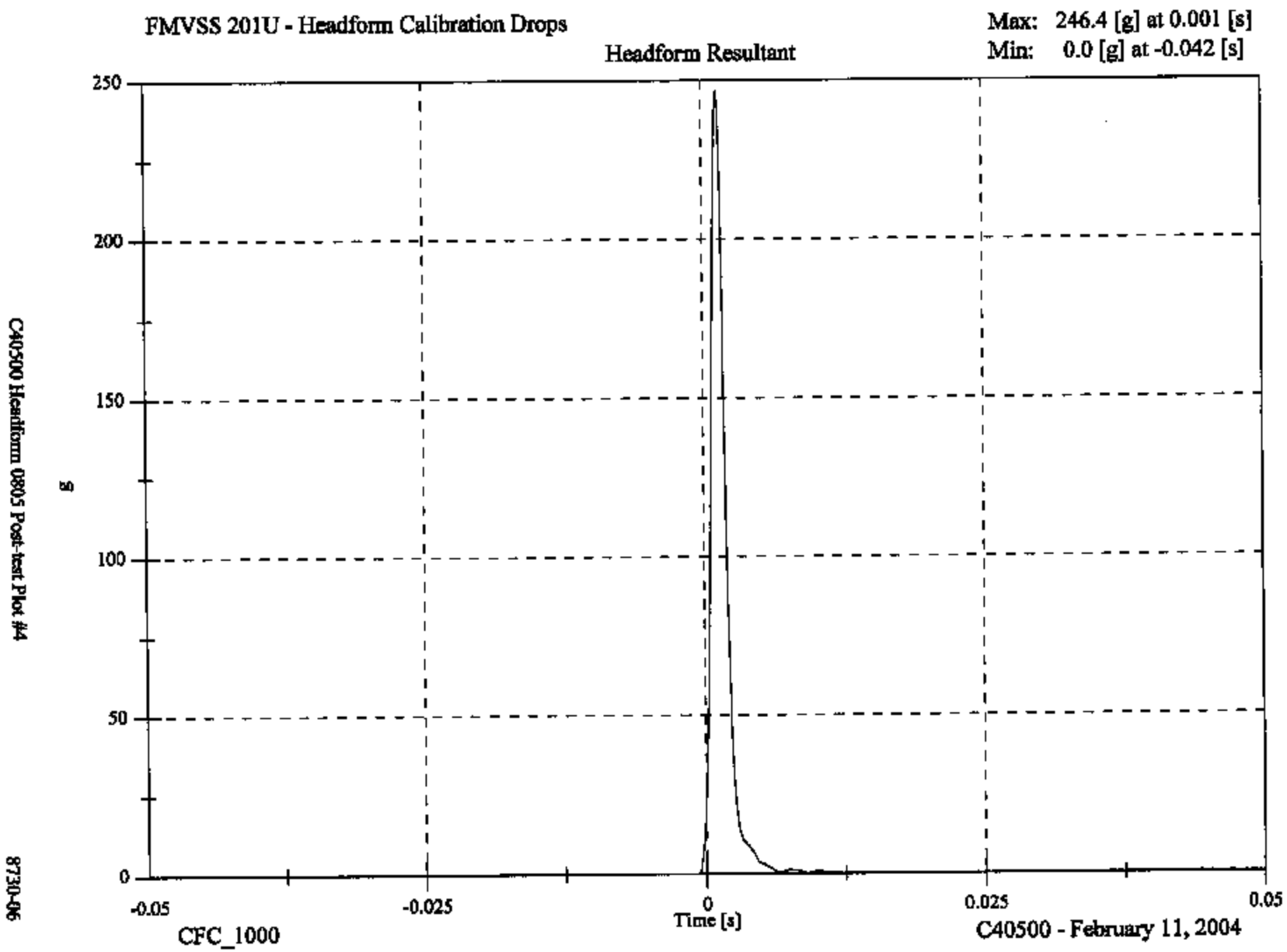
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J38127	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J37980	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J37854	08/22/03	02/23/04

REMARKS:


FMVSS 201U - Headform Calibration Drops
Headform X Acceleration
Max: 0.3 [g] at 0.010 [s]
Min: -211.5 [g] at 0.001 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0805 Post-test Plot #1
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Y Acceleration
Max: 0.2 [g] at 0.007 [s]
Min: -6.6 [g] at 0.001 [s]
1
0
-1
-2
-3
-4
-5
-6
-7
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0805 Post-test Plot #2
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 127.1 [g] at 0.001 [s]
Min: -1.2 [g] at 0.007 [s]
150
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0805 Post-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Resultant
Max: 246.4 [g] at 0.001 [s]
Min: 0.0 [g] at -0.042 [s]
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0805 Post-test Plot #4
8730-06

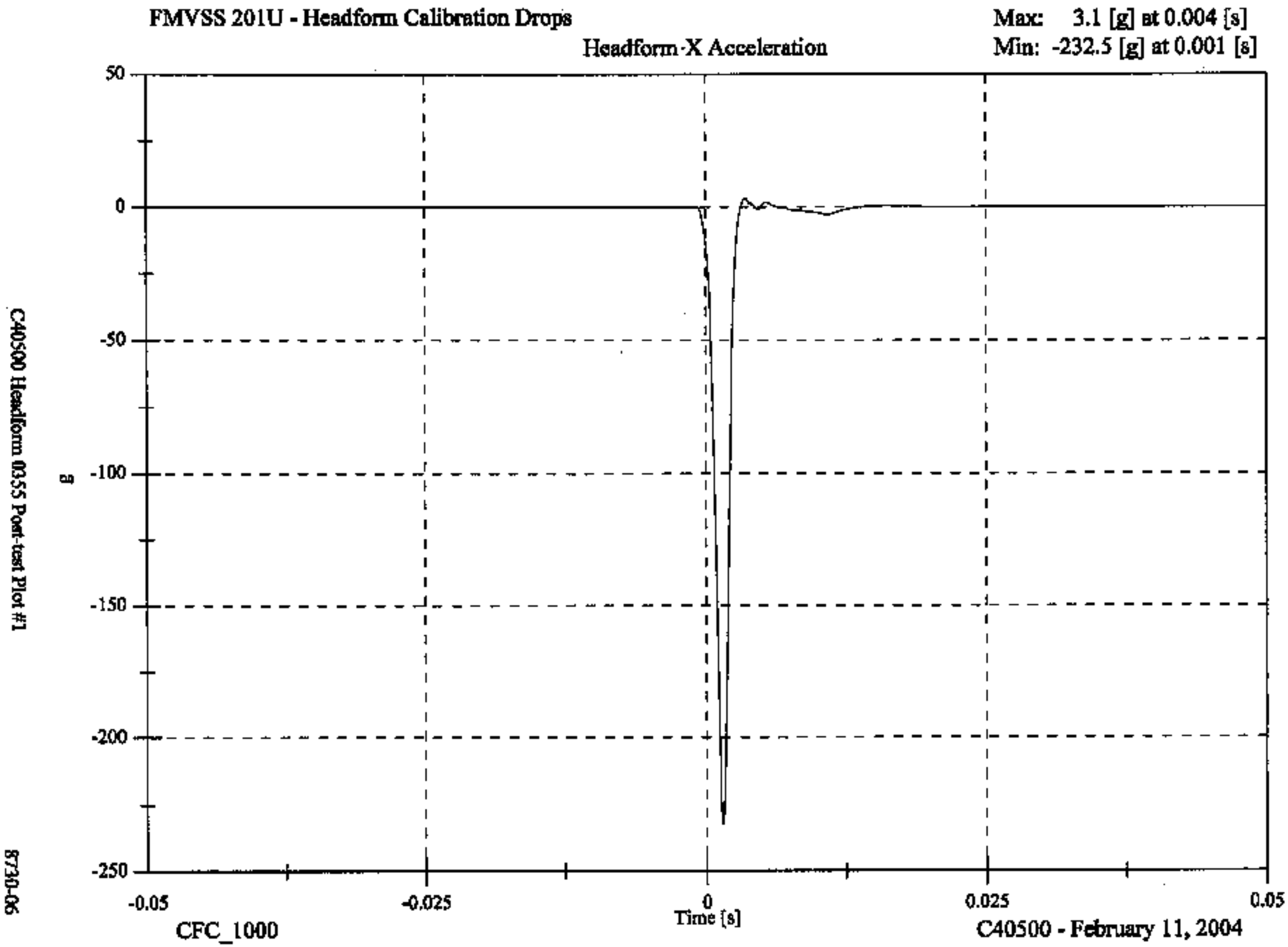
PART 572L
HEAD DROP POST-TEST

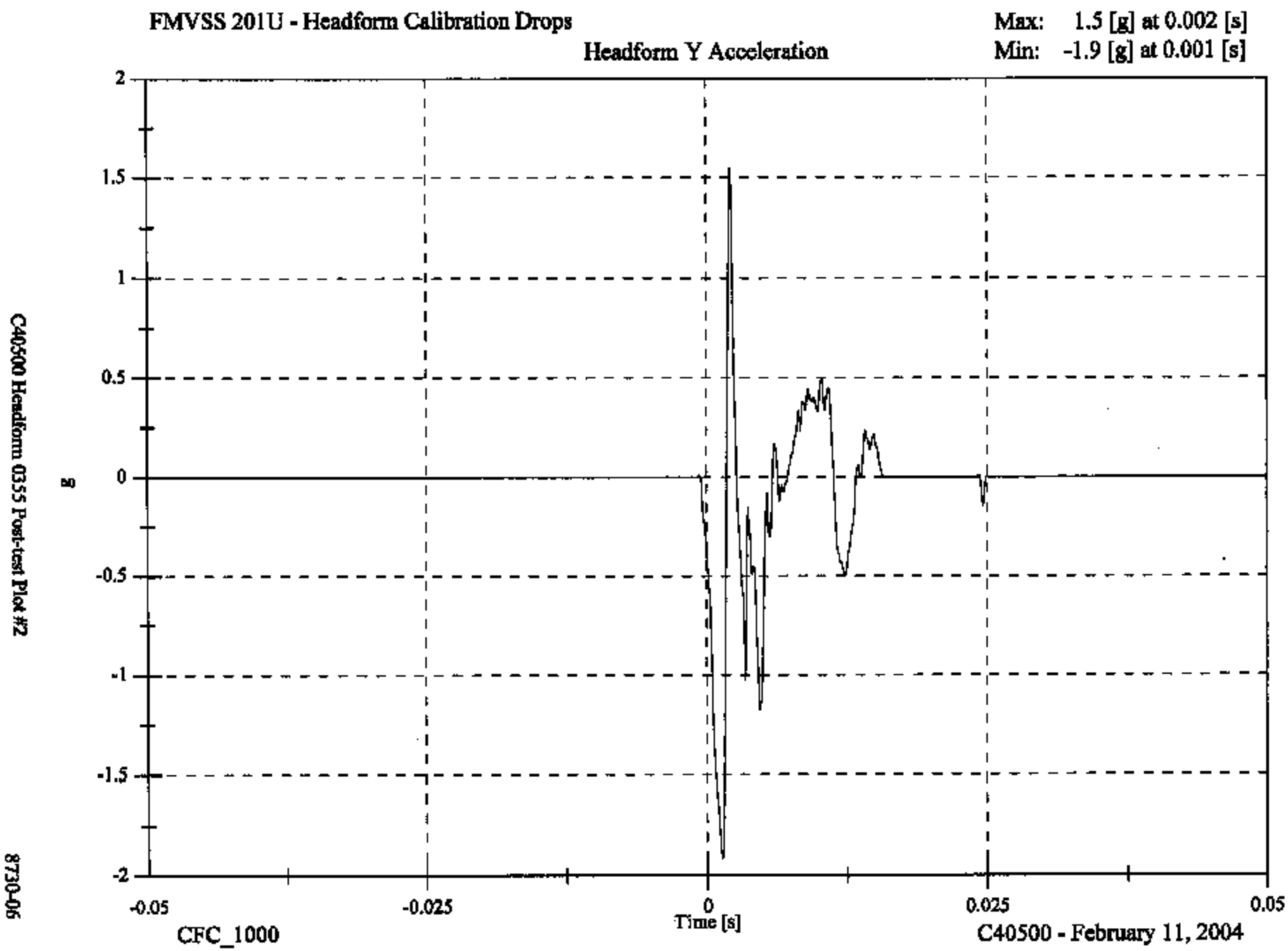
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**	
SERIAL NUMBER:	**0355**	
CALIBRATION DATE:	**February 11, 2004**	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	**19°C to 26°C**	**24**
RELATIVE HUMIDITY	**10% to 70%**	**18**
PEAK RESULTANT ACCELERATION	**225 Gs to 275 Gs**	**262.5**
PEAK LATERAL ACCELERATION	**15 Gs Maximum**	**1.9**
IS ACCELERATION CURVE UNIMODAL?	**YES**	**YES**

HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J28671	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J32779	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J25854	08/22/03	02/23/04

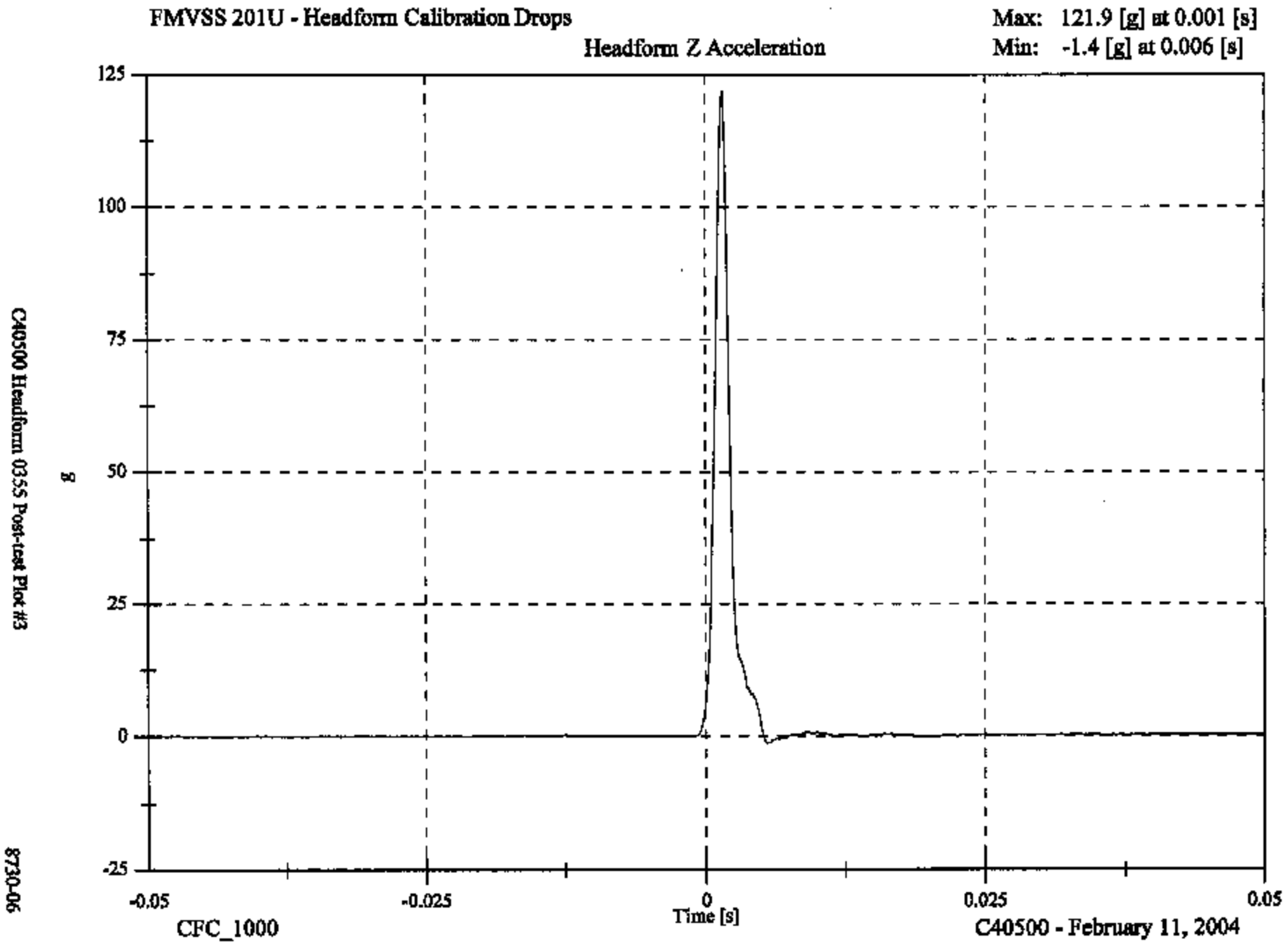
REMARKS:

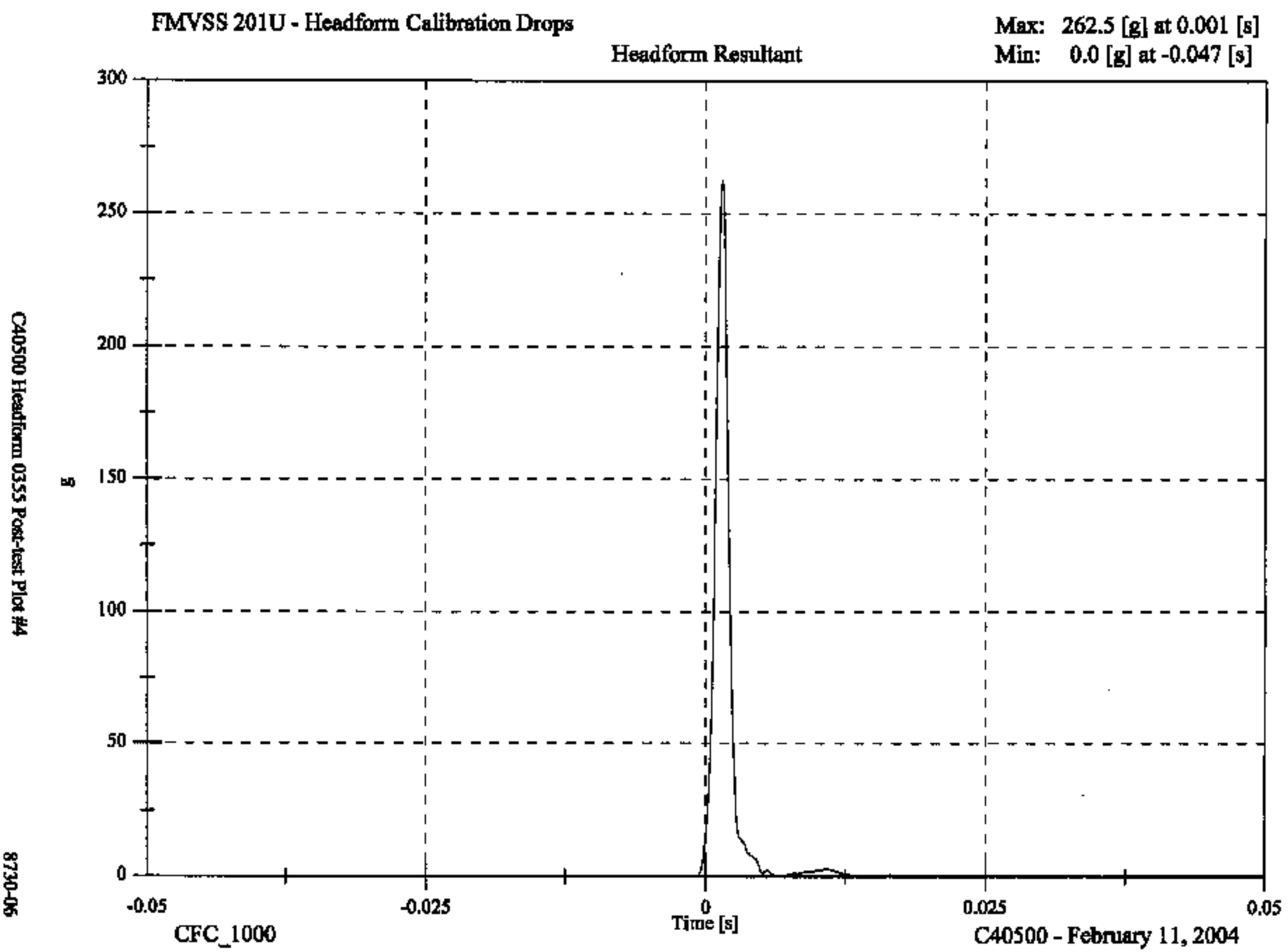

FMVSS 201U - Headform Calibration Drops
Headform-X Acceleration
Max: 3.1 [g] at 0.004 [s]
Min: -232.5 [g] at 0.001 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0355 Post-test Plot #1
8730-06



C40500 Headform 0355 Post-test Plot #2

8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 121.9 [g] at 0.001 [s]
Min: -1.4 [g] at 0.006 [s]
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0355 Post-test Plot #3
8730-06


FMVSS 201U - Headform Calibration Drops
Headform Resultant
Max: 262.5 [g] at 0.001 [s]
Min: 0.0 [g] at -0.047 [s]
300
250
200
150
100
50
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 0355 Post-test Plot #4
8730-06

PART 572L
HEAD DROP POST-TEST

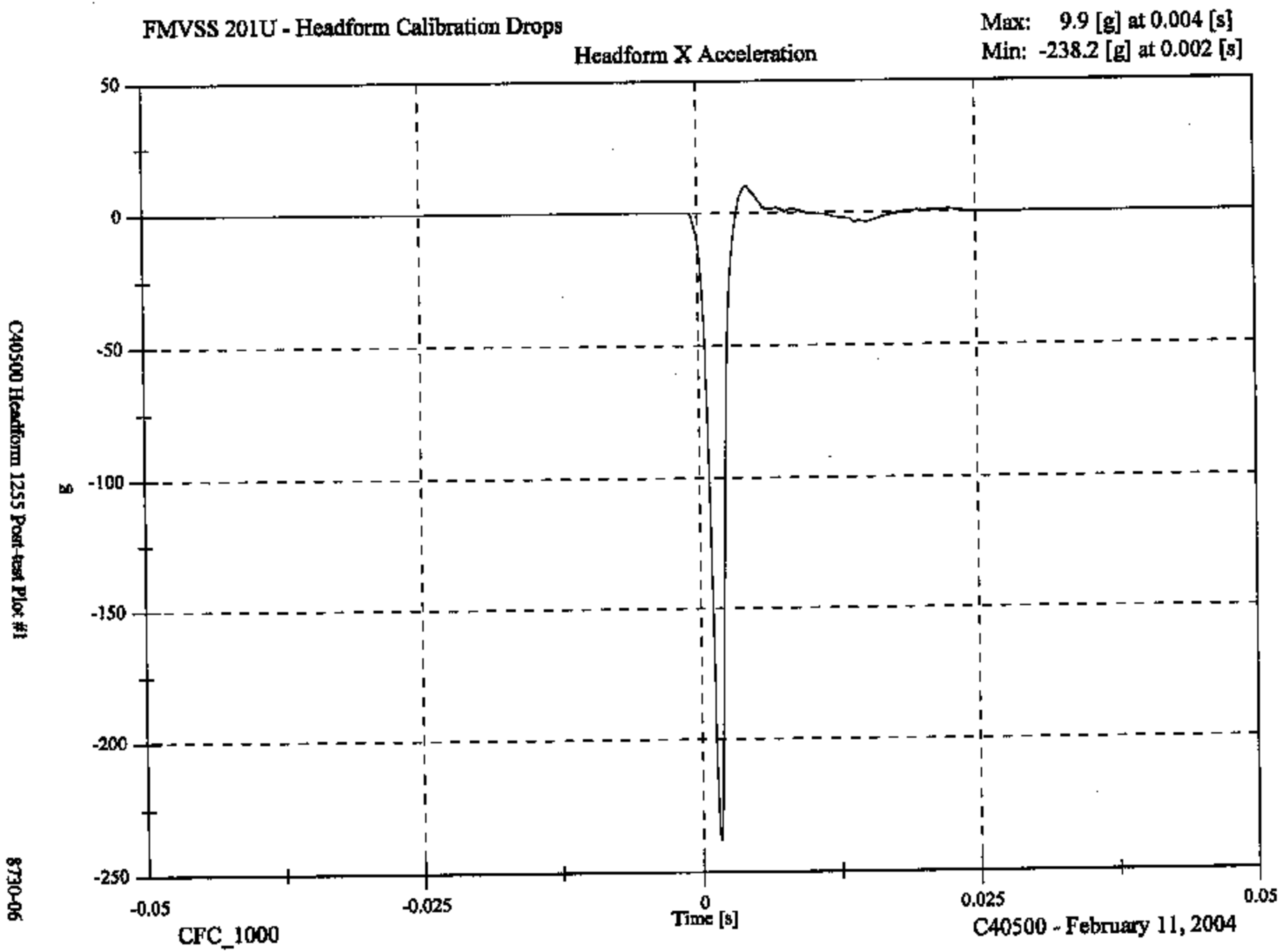
MANUFACTURER:	**FIRST TECHNOLOGY SAFETY SYSTEMS**
SERIAL NUMBER:	**1255**
CALIBRATION DATE:	**February 11, 2004**

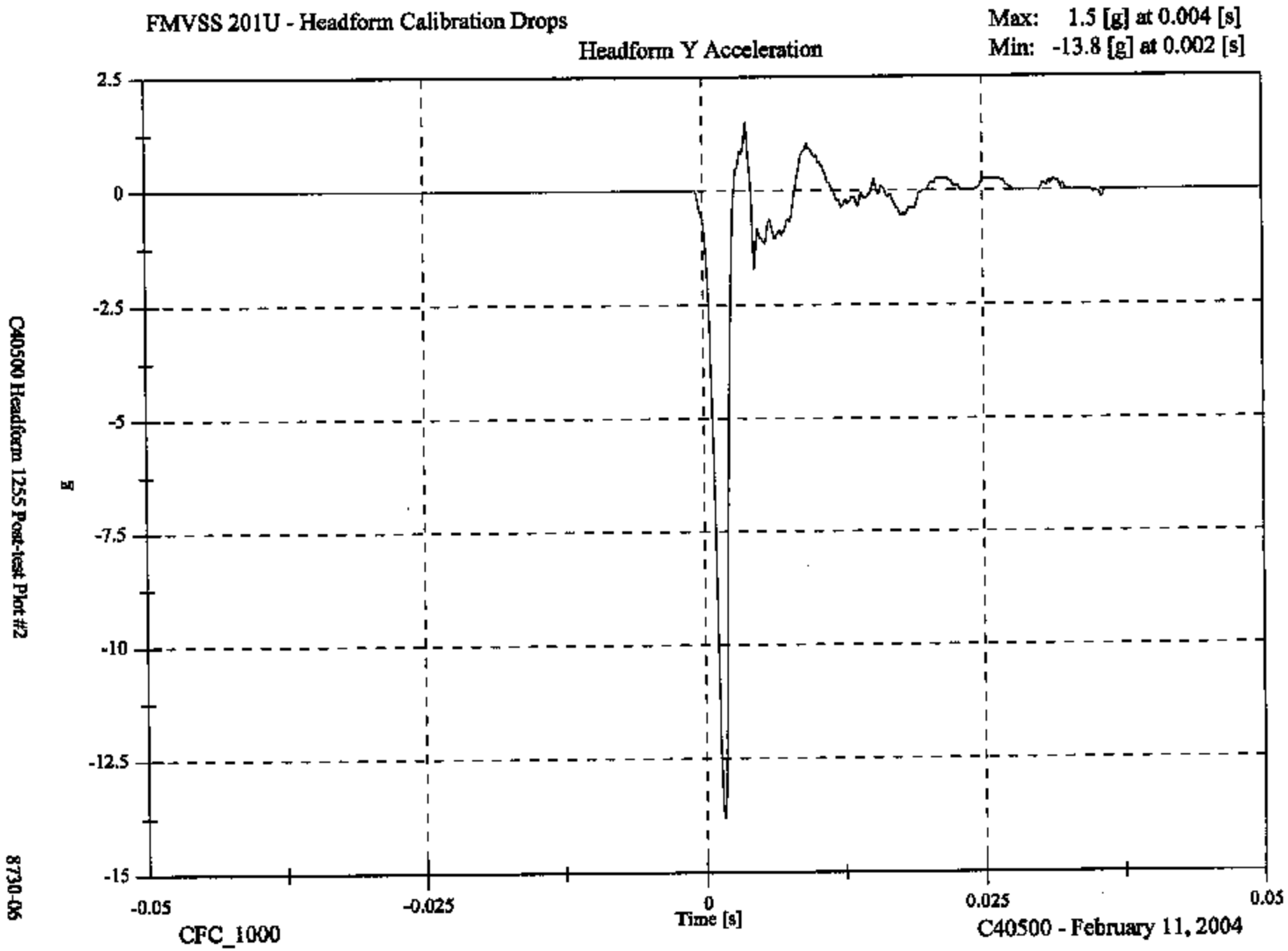
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	24
RELATIVE HUMIDITY	10% to 70%	18
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	267.8
PEAK LATERAL ACCELERATION	15 Gs Maximum	13.8
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J41006	08/22/03	02/23/04
2 - LATERAL	ENDEVCO	7264-2000T	J40994	08/22/03	02/23/04
3 - VERTICAL	ENDEVCO	7264-2000T	J41007	08/22/03	02/23/04

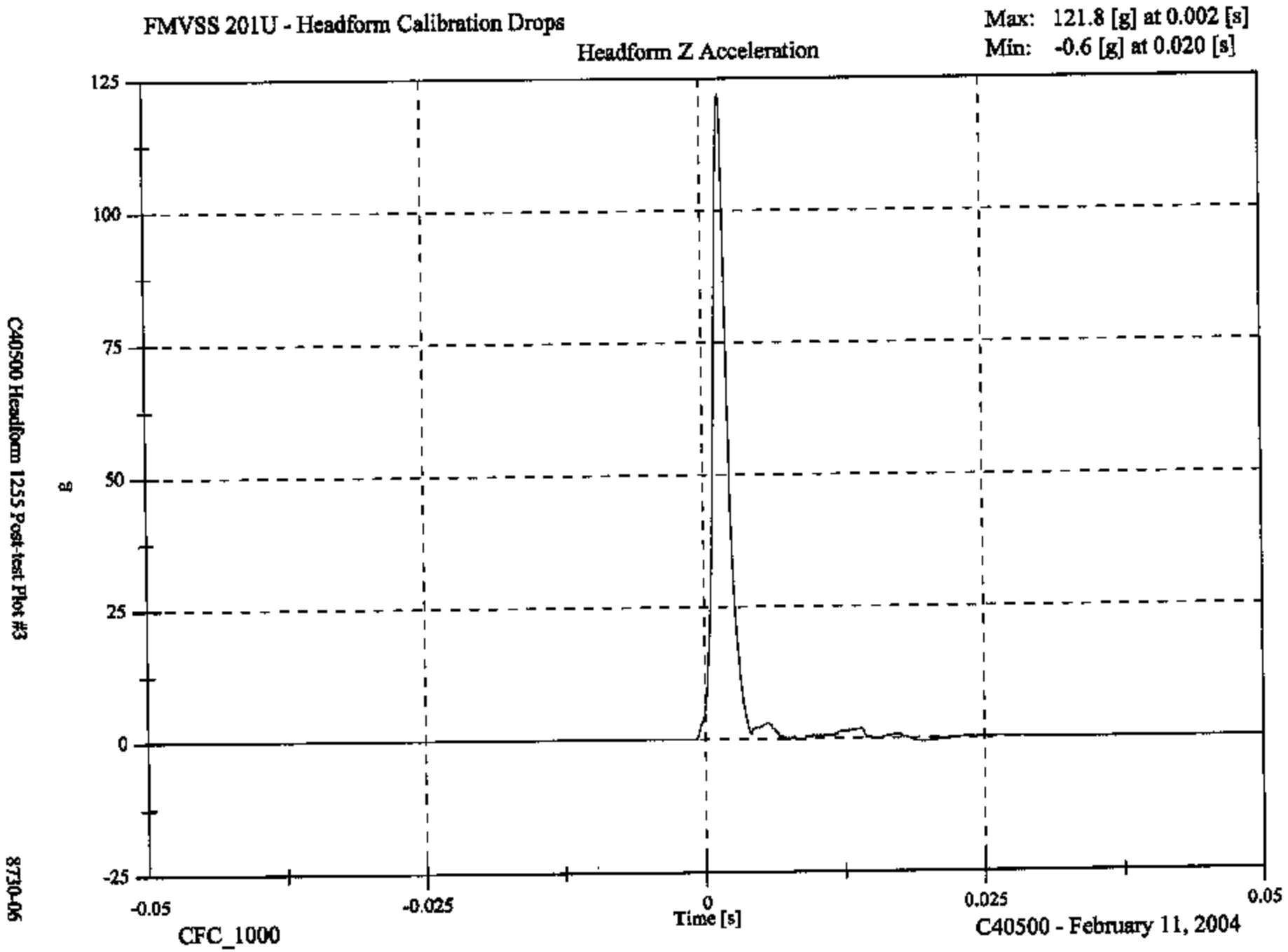
REMARKS:

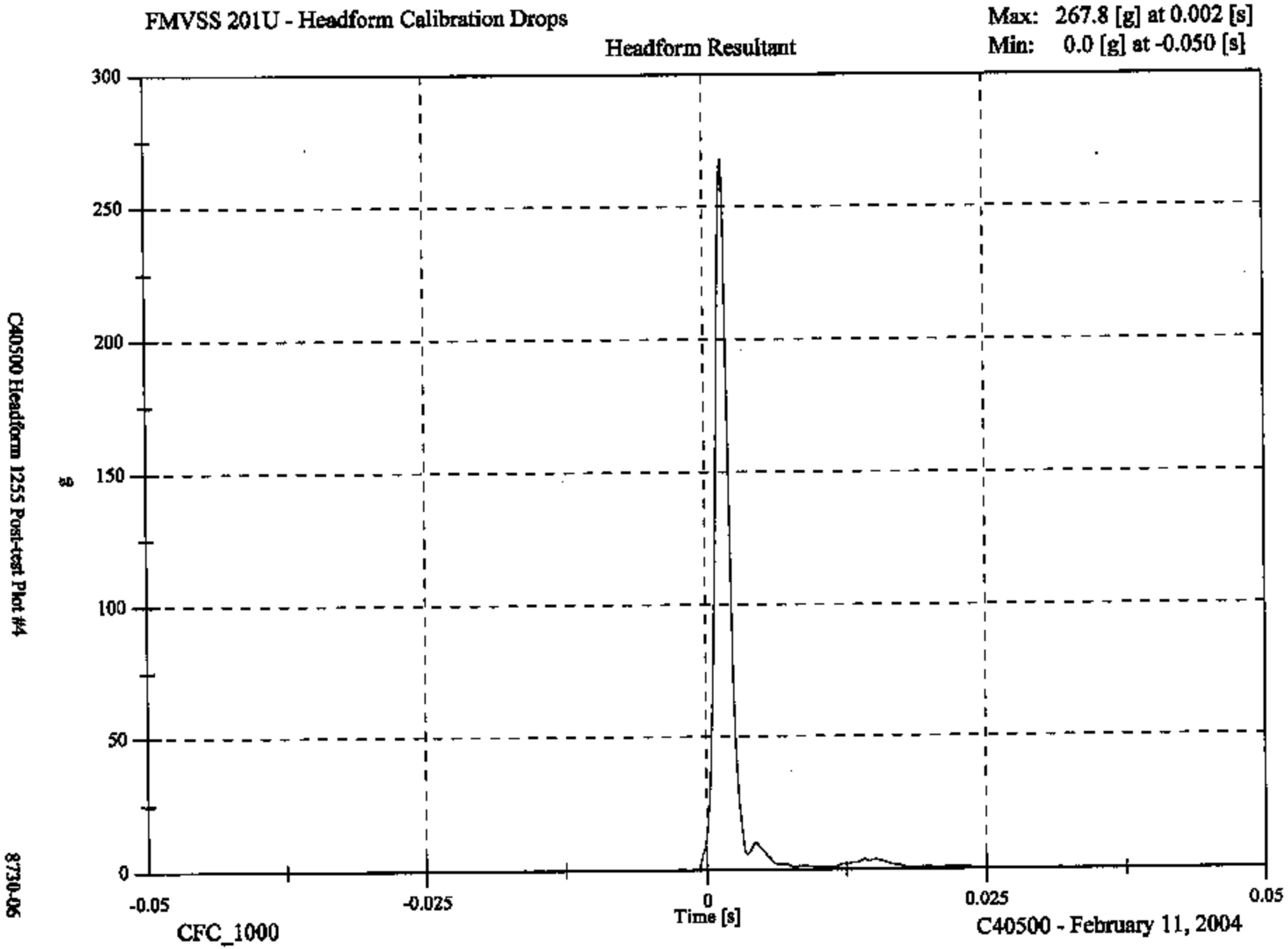

FMVSS 201U - Headform Calibration Drops
Headform X Acceleration
Max: 9.9 [g] at 0.004 [s]
Min: -238.2 [g] at 0.002 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 1255 Post-test Plot #1
8730-06



C40500 Headform 1255 Post-test Plot #2

8730-06


FMVSS 201U - Headform Calibration Drops
Headform Z Acceleration
Max: 121.8 [g] at 0.002 [s]
Min: -0.6 [g] at 0.020 [s]
125
100
75
50
25
0
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C40500 - February 11, 2004
C40500 Headform 1255 Post-test Plot #3
8730-06



C40500 Headform 1255 Post-test Plot #4

8730-06